ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF

THE ILLINOIS STATE MEDICAL SOCIETY

VOL. LVIII. OAK PARK, ILL., AUGUST, 1930 No. 2

ILLINOIS MEDICAL JOURNAL

Published monthly by the Illinois State Medical Society under the direction of the Publication Committee of the Council.

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Membership correspondence to Dr. Harold M. Camp, Monmouth, Ill.

Society proceedings and news items and changes in the mailing list to Dr. Henry G. Ohls, Managing Editor, 1618 Juneway Terrace, Chicago.

Contributors will submit all copy for publication typewritten on standard size paper and double spaced. Copy not complying with this rule will be returned, if convenient.

Subscription price of this Journal to persons not members of the Illinois State Medical Society is $3.00 per year, in advance, postage prepaid, for the United States, Cuba, Porto Rico, Philippine Islands, Hawaiian Islands and Mexico. $3.50 per year for all foreign countries included in the postal union. Canada, $3.25. Single current copies, 50 cents.

Editorials

WHAT IS THIS COMMUNITY MEDICAL PROBLEM?—IN LAY DIRECTED INSTITUTIONS THE PHYSICIAN IS CAUGHT COMING AND GOING

The man with the M. D. tacked onto his name as well as the man in the street are asking themselves quite frequently these days, "What is this community medical problem, anyway?"

It has been well said that while an individual may possess an illness, yet both the individual and the illness are the concern of the community and this is the heart of the community medical problem.

Statistics reveal that there are between 125 to 250 million cases of illness each year in the United States, and that further for every death recorded in the mortality statistics there are probably between 100 to 200 persons ill. For nonchronic diseases the average duration per annum amounts to some seven or eight days per capita. Now while the population of the United States increased but 30 per cent. during the years between 1908 and 1928, the number of hospital beds rose from 421,000 to approximately 893,000. Medical clinics increased from 600 in 1910 to 6,000 in 1926. There exist 7,000 hospitals with the capacity to care for 700,000 persons per day for whom there are 345,000 beds in general hospitals.

Of the approximately 143,000 doctors in the United States, probably some 110,000 are engaged in caring for the ill. With more physicians in proportion to the population than has any other nation, unfortunately the rural areas of the United States are as undersupplied as the urban vicinities are oversupplied with doctors, and the increasing death rate among the older physicians presents an acute problem to many a community. Some 55,000 midwives and some 32,000 nonmedical persons also aid in car-

ing for the sick, leaving about one and a half millions of persons employed in connection with the care and prevention of illness.

With the increased standard of living in the United States it has been estimated that the average budget on a salary of, say, $2,000 would permit of an allowance of some $41.60 per annum for medical, surgical and nursing care.

"According to the United States Bureau of Labor Statistics for the years 1918-1919 an average of $10 per person for medical care was allotted for families when the income was between $1,500 and $1,800 a year," says an exchange. "For families with an annual income of $2,500 an allowance of $16 per person was made, and for incomes above $2,500, $18 per person was allowed. It must be borne in mind that this standard family consists of a man, his wife and two to three children. The United States census for 1920 indicated 4.4 persons per family in New York City. Experience has demonstrated that 40 per cent. of people at age 65 are dependents. It is estimated that the annual cost in the United States for medical, surgical care and nursing approximates $4,000,000,000, with an additional wage loss two and one-half times as great. These, then, represent the basic elements that enter into the community medical problems, which affect the welfare of physicians."

The general prophylactic attitude towards public health has been manifested most widely in public service where society has set up its own machinery for attacking persistent problems, and, it must be admitted, oftenest with more lay enthusiasm than scientific skill. To the community health preservation is the primary concern. To the physician illness is the primary and health preservation secondary. Naturally there is a split between the profession and the lay men—whether it is best to keep up community health or to heal the individual sick man. Another thing in these lay directed institutions the physician is caught coming and going. He pays taxes as a citizen to keep up the lay machinery that increases his own scientific labor and decreases his own value as a wage earner.

This distribution of economic costs is the live wire in the community medical problem that is liable to short circuit the whole perfect achievements of modern scientific medicine. The physician is neither endowed nor divine. He has to live and so does his family. Killing the golden goose is an old trick but none the less a sad one. And when modern scientific medicine is put on the wheel by lay interference, the real and the great sufferer will be the sadly hoodwinked public.

There must be a decided revision of the slate in point of relations on an economic standard between the medical profession and the public, but this can not come about by usurpation of scientific rights nor by depriving the physician and his family of their bread and butter. This new competition that the physician is facing of lay endowed foundations, clinics and medical schools, even state supported institutions practicing medicine, is beyond belief to men of vision and perspective.

DR. HUMISTON IS APPOINTED A MEMBER OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE A. M. A.

At the Detroit meeting of the American Medical Association Dr. Charles Edward Humiston of Chicago, Illinois, was appointed a member of the council on medical education and hospitals by Dr. William Gerry Morgan, the president of the A. M. A.

The virtue of this appointment is best evidenced by a brief recapitulation of the activities of Dr. Humiston.

He is widely known as a teacher of medical subjects, and is professor of clinical surgery in the school of medicine of the University of Illinois, and for eighteen years attending surgeon to the Cook County Hospital. Further, Dr. Humiston was one of the founders of the West Suburban Hospital, a two and one-half million dollar institution that is not only self-supporting but which even without endowment furnishes the highest type of hospital service—one of the finest hospitals in the country.

Dr. Humiston is recognized as a leading advocate and that along sane lines, of higher medical education, for more than twenty years has been interested in public health welfare matters as advocated through regularly organized medical channels and an uncompromising opponent of all forms of quackery.

During his term of office both as president of the Chicago Medical Society and of the Illinois

State Medical Society Dr. Humiston has served his profession ably and well. For many years Dr. Humiston has been a member of the House of Delegates of the A. M. A.

In this day of almost universal passion for false leaders it is refreshing to note how Dr. Humiston's keen mind has never swerved from conservative and ethical ideals and how the will-o-the-wisps of false reforms have never misled

CHARLES EDWARD HUMISTON, M.D.

him. It is to Dr. Humiston's forethought and capability that the best state medical law in the country is due—the Illinois Medical Practice Act of which he is the author. Further, Dr. Humiston has proven himself no mean soldier in the ranks of the bitter fight against lay interference and dictation in the practice of medicine.

Dr. Humiston was an early, consistent and persistent advocate of hospital standardization by the American Medical Association, and is vigorously opposed to all meddlesome interference in this matter on the part of any and all other self-appointed standardizing groups of every kind and character.

Dr. Humiston's part in the fight against the Sheppard-Towner and the Harrison Narcotic Acts are matters both of memory and of record. It will be recalled that he appeared personally, July 18, 1921, before the Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D. C., in opposition to the original Sheppard-Towner Bill. At the time mentioned Dr. Humiston was president of the Illinois State Medical Society and up to that time Illinois was the only state medical society that had gone on record in opposition to the vicious medical legislation exemplified in the Sheppard-Towner Bill and similar menacing medical legislation that has since become epidemic.

Dr. Humiston is in touch and in sympathy with the aims and needs of the profession. He is one of the ablest men in the medical profession for the position of member of the Council on Medical Education and Hospitals. We bespeak for Dr. Humiston as a member of the committee a popular and successful administration of the affairs of the American Medical Association.

President Morgan is to be congratulated upon this appointment of Dr. Humiston's. This is a delegation of power to hands and brain trained to its use and almost incapable of its abuse.

DR. J. E. CAMP'S GOLDEN JUBILEE—VETERAN PHYSICIAN HONORED BY HANCOCK MEDICAL SOCIETY

The Golden Jubilee of Dr. Julian E. Camp of Augusta, Illinois, practicing physician for fifty years, was celebrated by a testimonial dinner July 7, given by the Hancock County Medical Society. The meeting was held at the beautiful Hancock County Automobile Club, on Lake Cooper, just above the Keokuk dam. Dr. R. F. Sheets, the society president, presided.

The senior Dr. Camp is the father of Dr. Harold M. Camp of Monmouth, Ill., secretary of the Illinois State Medical Society. A native of Pennsylvania, Dr. J. E. Camp at the age of five years was brought to Illinois by his parents, who settled in Adams county. A fortnight after his twenty-first birthday anniversary Dr. Camp received his diploma of medicine and in another fortnight was practicing in Brooklyn and neighboring terrain of Adams county.

The first speaker on the program was Dr. J. E. Camp, who gave a talk on "Medical Practice

in 1880," relating many interesting phases of practice at that date. He told stories of arduous and sleepless nights, traveling on bottomless roads that seemed like fairy tales to the young doctors who have no greater hardship than a punctured tire when they go out on country calls these days.

This veteran "saddle-bag" doctor took the first hypodermic syringe, stethoscope and fever thermometer into that district. His older confreres made fun of them—and him—but the young man had the courage of his ideas and stuck them out. Despite the fact that he was told that a "real doctor" didn't need such flub-dubs, he has lived long enough to see that no "real doctor" gets along without them. This typical family physician of the old school has kept pace with general medical developments and improvements, through postgraduate courses in Chicago and in New York, and has steadfastly refused all invitations to remove into urban communities. After forty-seven years of continuous practice in one community he did remove twelve miles distant to Augusta in Hancock county. This put him on the railroad and into a modern home, with cement roads at his disposal. Whereas now Dr. Camp can perform operations in the marvelous, almost miraculous equipment furnished by modern hospitals, many of his early patients were operated on by lamplight and upon the traditional kitchen table and lived not only to tell the tale but to brag of it—serious operations, too.

All of which goes to show that the man and his skill must rise superior to environment if it is to be effective.

In his earlier practice summer dysenteries and autumn malarias and typhoids were Dr. Camp's grist for years, diseases that the modern doctor is seldom called on to treat. Though now he covers his large country territory by automobile and could do it by airship, in the early days his radius of from 15 to 25 miles was done either on horseback, with the saddlebags over the good old roan, on roads that were corduroy or worse, or with more favorable conditions with horse and cart or buggy.

In this work he had to have three horses at least and to use them alternately. The horse could have a change and a rest; the man of science could not. When work was hardest it was the practice of Dr. Camp to take a driver, and what sleep he had was what he got between patients.

Ever a voluminous reader, Dr. Camp has a library of his own that approximates 1,000 volumes. He is very fond of psychological reading and in his practice inclines towards neurology. Herbert Spencer and James are among his favorite authors.

Unusually active for a man in his seventy-third year, Dr. Camp not only attends regularly the meetings of his medical society but takes an active part in them.

During Dr. Camp's fifty years of practice his profession has made greater scientific advance than it had done in fifty preceding centuries.

As a souvenir of the occasion Dr. Camp was presented with a leather covered autograph album containing the personal signature of every lady and gentlemen present at the dinner and meeting. The cover of the album has the Doctor's name stamped in gold.

The family physician of the country district who serves through half a century, perhaps seeing his town grow into a city during that period, stands in a distinct class in these days of city specialists. A great satisfaction it must be to Dr. Camp to think back over these busy years. We are indeed glad that his fellow doctors and his many friends and fellow townsmen saw fit to unite in showing this evidence of their appreciation. The following amply applies to Dr. Camp as well as to many hard working physicians:

Fifty years is a long time in one life, yet night and day, in the storms of winter and through all kinds of roads, Dr. Camp has been at the call of everyone who needed his help in that whole countryside. His cheerful presence and efficient help have been a rock of strength in innumerable families, in the dawn of life, in countless sick-room crises, and finally when death rang down the last curtain.

Yet, with all this hard work, and in spite of the trouble and suffering that a physician is called upon to see, Dr. Camp has been able to keep his cheerful, hopeful outlook on life, and

today it may be said of him, as Dr. Oliver Wendell Holmes said of a friend:

"To be seventy years young is sometimes far more cheerful and hopeful that to be forty years old."

Following Dr. Camp on the program, Dr. William B. Chapman of Silvis, president of the Illinois State Medical Society, spoke on "Then and Now." Dr. Chapman, son of an Illinois pioneer physician, told of his earliest recollections of medical affairs occurring in his father's practice. He contrasted medical education, knowledge, methods and diseased conditions of fifty years ago with those of today. His talk was particularly along economic lines.

Dr. Andy Hall, Director, Department of Public Health, Springfield, had for his topic "The Relation of the Public Health Department to the Practicing Physician." In characteristic forceful manner, Dr. Hall showed the absolute necessity of complete co-operation between these agencies for improving public health. Dr. Hall proved conclusively that Health Departments should be supervised by medical men, who in turn should receive the fullest co-operation from medical men and medical societies in order to function to the best advantage. Reference was made to improvements in mortality and morbidity statistics in Illnois; suggestions were made as to how they can still be improved.

Dr. E. P. Coleman, Councilor of the Fourth District, Illinois State Medical Society, Canton, Illinois, spoke on "The Treatment of Eclampsia" in which he contrasted the results of former methods with those of today. He advocated the use of glucose and magnesium sulphate intravenously, with an immediate emptying of the uterus, and reported that in his recent series of 14 consecutive cases, there were no deaths. This meeting was attended by more than one hundred doctors from Illinois, Iowa and Missouri, and once more illustrated the fact that a small society can have a big meeting. The meeting was arranged by Drs. R. F. Sheets and W. I. Irwin of the Hancock Society. In addition to Dr. J. E. Camp, two other physicians were present who were graduated more than fifty years ago—Dr. C. L. Ferris of Carthage and Dr. I. F. Harter of Stronghurst. Among the guests from a distance was Dr. E. B. Goodwin, secretary of the Missouri State Medical Society, St. Louis.

THE AMERICAN MEDICAL ASSOCIATION ADOPTS TELLING RESOLUTION AGAINST PERPETUATING THE SHEPPARD-TOWNER MATERNITY AND INFANCY ACT

At the Detroit meeting of the American Medical Association the following resolutions were offered by the Board of Trustees adopted by the House of Delegates on recommendation of the Reference Committee on Legislation and Public Relations:

WHEREAS, The American Medical Association is in entire sympathy with the cooperative effoorts of federal and state agencies to establish and develop official local health organizations for the conduct of those activities which are generally recognized as the proper functions of such health departments; and

WHEREAS, The usurpation of any public health function by any lay bureau of the federal government, which, through allotments of federal subsidies for special health service, seeks to duplicate and administer duties and functions already placed by law on the United States Public Health Service; and

WHEREAS, The United States Public Health Service has in the past efficiently discharged its duties with respect to such matters and now, through recent reorganization, has been provided with enlarged facilities for carrying on such work; and

WHEREAS, An effort is now being made to revive and perpetuate the federal subsidy system established under the defunct Sheppard-Towner Maternity and Infancy Act, which authorized the payment of state subsidies over a fixed period of years, on an arbitrary and irrational basis of population, without reference to the ascertained sanitary and health needs of the several states or to their ability to meet their own needs; and

WHEREAS, The payment of such subsidies was made dependent on the surrender by the legislatures of the several states, to the federal government, of the right to supervise and control state activities in the selected field of public health; and

WHEREAS, This system after seven years' trial under the administration of a lay bureau effected no improvement in the field of public health in which it was operative, notwithstanding the ex-

penditure of more than 11 million dollars of federal and state money; and

WHEREAS, In the judgment of the House of Delegates of the American Medical Association, any such system tends to destroy local initiative and sense of responsibility and to pay federal funds for purposes named by the federal government to states not in need of federal aid; be it

Resolved, That the House of Delegates of the American Medical Association condemns as unsound in policy, wasteful and extravagant, unproductive of results and tending to promote communism, the federal subsidy system established by the Sheppard-Towner Maternity and Infancy Act and protests against the revival of that system in any form;

Resolved, That it is the sense of the House of Delegates that each state should be left free to formulate its own health program, with the cooperation of the United States Public Health Service if desired by the state, free from any inducement or compulsion in the way of federal reward or coercion;

Resolved, That any legislation involving cooperation between the federal government and the several states in the field of public health must, in the interest of efficiency and economy, in the judgment of the House of Delegates, be administered under the joint supervision and control of the United States Public Health Service and the state health authorities; and be it further

Resolved, That copies of these resolutions be sent immediately to the President of the United States and to every Senator and Representative in Congress.

A supplementary report to the above was adopted at the same meeting:

Resolved, That the Board of Trustees be requested to initiate as speedily as practicable a movement to enlist every state medical association and county medical society, and every member of the medical profession, in a movement to carry into effect the policy of the American Medical Association, as defined in the preceding resolution, with respect to co-operation between federal and state governments in public health activities.

Both resolutions were referred to the committee on legislation and Public Relations. In approving the resolutions the committee made the following notation:

Your committee has carefully considered the excellent resolution presented by the Board of Trustees relative to federal aid for maternal welfare.

The resolution shows evidence of most thorough study and careful preparation.

The committee feels that the beneficial effect of this resolution when passed by the House of Delegates of the American Medical Association should have a far-reaching beneficial effect and should be of great assistance to the profession throughout the United States in its campaign of education of the public in which we are endeavoring to show the menacing effect of paternalism so beautifully exemplified in the so-called Sheppard-Towner and similar forms of legislation.

For a period of ten years the ILLINOIS MEDICAL JOURNAL has fought consistently against the enactment in this country of all forms of legislation as typified in the Sheppard-Towner Act.

A similar legislation to the maternity and infancy statute is an invitation to progressive encroachment by the Federal Government on the rights and independence of the state. It opens the way to snooping interference by Washington with the private affairs of domestic life.

The evil of federal interference might be tolerated if it could be shown that the benefits to mankind were sufficiently large and could be obtained in no other way but nothing of this sort has been shown; only recently we demonstrated in the columns of this journal that Illinois, one of the five states that refuse to submit to Sheppard-Towner law dictation had the lowest infant and maternity mortality rate in the country.

The Sheppard-Towner law has been wasteful, extravagant and unproductive of results, and has a tendency to promote communism; and we believe that it should be definitely shelved so that each state may be left free to formulate its own health program with the co-operation of the United States Public Health Service if desired by the State, free from any inducement or compulsion in the way of federal reward or coercion. Our attitude on Sheppard-Towner and similar forms of legislation is that of ex-president

Coolidge's doctrine of state rights and responsibility.

DOCTORS WHO HAVE ACHIEVED FAME IN OTHER FIELDS THAN MEDICINE, ART AND METAPHYSICS

DR. GEORGE B. LAKE

The apotheosis of the tangible and the intangible effect at least partial contact in the vocation and avocation of George B. Lake, M. D. The human body is acclaimed as the perfect machine. Perhaps from a divine perspective it may always be the most magnificent poem, and the grandest sonata. Into that realm of the invisible, among the world of the mystics, Dr. Lake has let run his fancy in his spare moments.

During the last five years this capable physician has been an active and respected member of the American Society of Psychic Research. His study and research of esoteric philosophy is backgrounded both by a knowledge of comparative religions, carefully attained, and his practical scientific training. Certainly there is no science more practical than that of medicine.

Poetry, twin sister of music, and both the children of rhythm, was the medium for Dr. Lake's interest in much of the great invisible, but dare we call it the impalpable?

At 16, Dr. Lake began to write verse. During the twenty-five years that have elapsed since then not only has this penchant become a hobby but it has developed both an attentive consideration and a research in pictorial art.

Some twelve or fifteen years ago, shortly after first turning his mind to esoteric philosophy, Dr. Lake became a Fellow of the Theosophical Society. Gradually he began both to lecture and write sporadically, on the scientific and psychologic aspects of occultism and mysticism, and later in ritualism, both as practiced in the various branches of the Catholic church and in Freemasonry. Among published work of this sort were "The Science of the Unseen" in the *Medical Journal and Record* under date of July 6, 1927; "Needed—A Philosophy of Life," in *Welfare Magazine* for April, 1928, and "Fundamentals of Practical Psychology" in *Medical Journal and Record,* April 16, 1930.

Dr. Lake is a life member of the Art Institute. He is interested especially in the works of George Inness and the Barbazon school of painters under which Innes' later technic was developed. For more than three years Dr. Lake has been conducting classes gratuitously for the systematic study of esoteric philosophy. He is an active worker in the liberal Catholic church.

Further, Dr. Lake's fame as a poet is spreading.

Much of his work is of the mystic school—Blake, Pater, Shelley, Keats and the Rosettis trod that path before him. Poetry magazines of the higher grade welcome his contributions—among them the "Bookfellow's Anthology." About eighteen months ago Dr. Lake published a book, "The Apostle of Joy," from which is taken the reprinted selection:

"The Joy of God"

God must love mountains and the mighty blast;
Snow and high places; dew and dainty flowers
That, in the springtime, fill the verdant bowers
With fragrance; and the silent, thrilling, vast
Peace of the night with darkness overcast.
He must love sunsets, too; the twilight towers
Of cloudland are all rosy though the hours
Of glory flame where lonely gulls fly fast.

I have seen mountains, winds and lightning's power;
I've seen a wee pink posy 'neath the trees,
Far up the crags, where scarce a man e'er trod,
And I believe the tempest and the flower
And opal dawns, breaking o'er empty seas,
Show forth the beauty and the joy of God.

George Burt Lake.

(From "An Apostle of Joy.")

George B. Lake was born in Topeka, Kansas. Attended high schools in Howell, New Baltimore and Ann Arbor, Mich., and Wheaton College Academy, Illinois. Graduate of Rush Medical College (1902). Served for two years as assistant surgeon, Mexican Central Railway. General practice in Wolcottville, Indiana, for six years, during which time served for four years as Town Health Officer; for three years as Special Lecturer in Rural Hygiene and Sanitation, Purdue University, Ind.; and was an official delegate from Indiana to the Sixth International Congress on Tuberculosis. Graduate of Army Medical School in 1911 and served as an

officer of the Medical Corps of the Regular Army for 14 years, including three years in the Philippine Islands and a year in Mexico with the Punitive Expedition. (At present, Colonel, Medical Reserve Corps, U. S. A.) Now Managing Editor, *Clinical Medicine and Surgery;* Attending Internist (psychotherapy), American Hospital (Chicago), and lecturer for the Scientific Service Committee, Illinois State Medical Society.

Fellow of the A. M. A.; Associate, American College of Physicians; member, Association of Military Surgeons of the United States, Association for Study of the Internal Secretions, Medical Round Table of Chicago (present 1925 to 1927), American Medical Editors' Association and Press Club of Chicago. Licensed to practice in Indiana and Illinois. Specialty, psychotherapy.

In our column of "Hobbies of Medical Men" we have as candidates for future write-up the names of the following physicians who have achieved fame in fields other than medicine. They are:

William Barnes, Decatur. Ill.; Carl Schneider, Henry T. Byford, Richard S. Patillo and Louis J. Tint, all of Chicago. Do any of our readers know of additional names that should be added to the list?

HONOR TO WHOM HONOR IS DUE—TESTIMONIAL DINNER GIVEN TO OUR PRESIDENT, DR. W. D. CHAPMAN OF SILVIS, ILL.

Black Hawk State Park, once the capital of the Sauk and Fox nation, had a notable gathering of medical men when on June 10 the Rock Island County Medical Society gave a testimonial dinner to Dr. W. D. Chapman of Silvis, Ill., who in May, 1930, became president of the Illinois State Medical Society.

The Rock Island County Medical Society as well as its fellow societies throughout the state know full well that Dr. Chapman has more than earned any honors that can be bestowed upon him. For twenty years Dr. Chapman has been in the forefront of every movement to stem the vicious trend of economic and political affairs in this country and to check the tide of bureaucratic legislation threatening to destroy the bulwark of democracy, the Constitution of the United States. In and out of season, Dr. Chapman has both worked and appeared in person in opposition to all forms of vicious medical legislation whether at Springfield, Ill., or Washington, D. C. Nor has Dr. Chapman failed once as both a worker and a leader in the rank and file of industrious medical men.

Most efficiently he has filled all the numerous official positions that have been his added labor.

To have held this dinner in Watch Tower Inn was a fitting thing. Blackhawk's old home. And both Blackhawk and Chapman are good Indians—the one now dead, the other, thank God, still living.

Blackhawk fought for the preservation of his tribesmen. Dr. Chapman fights for the cause of humanity and the preservation of medical integrity.

Officers of the Rock Island County Medical Society are: President, J. C. Souders; vice-presidents, A. Knutson and P. H. Wessel; secretary, W. F. Schroeder; treasurer, C. C. Ellis, and medical legal advisor, A. T. Leipold.

Dr. Leipold headed the committee on arrangements for the banquet, assisted by Drs. H. A. Beam, L. C. Ostrom and A. E. McEvers. The program ran:

Meeting called to order by Dr. J. C. Souders, president, Rock Island County Society, Rock Island.

Toastmaster, Dr. L. C. Ostrom, Rock Island.

"Associations With Royalty"
Dr. Harold M. Camp
Secretary, Illinois State Medical Society, Chicago

"My Earliest Impressions of Dr. Chapman" and "Legislative Topics"
Dr. J. R. Neal
Chairman Legislative Committee, Illinois State Medical Society, Springfield

"Friend Chapman"
Dr. James H. Hutton
Chairman Scientific Service Committee, Illinois State Medical Society, Chicago

"Dr. Chapman, the Practical Physician"
Dr. Chas. J. Whalen
Editor Illinois Medical Journal, Chicago

"Medical Impressions"
Dr. J. Henry Mundt
Past President Illinois State Medical Society, Chicago

"Greetings from the State Department of Public Health"
Dr. Andy Hall
Director Public Health, Springfield

Considering that among the Indians at least the medicine man was never begrudged the fat of the kill and the best of the harvest, it may not be amiss to set down a word or two of information regarding Blackhawk and the park where in 1780 the great Sauk village was attacked by an expeditionary force sent out by Gen. George Rogers Clark in the westernmost campaign of the War of the Revolution. Blackhawk, then thirteen years of age, saw his home tepees all go up in smoke. This region was literally drenched with the blood of patriots. It was so often and in so many wars a battleground that it is land too sacred to be used for anything but a memorial park.

As an indication of high esteem in which Dr. Chapman is held by his brother physicians, every member of the Rock Island County Medical Society was present at the testimonial dinner. Dr. Chapman was presented with a beautiful traveling bag as a token of appreciation by the Rock Island County Medical Society.

ILLINOIS STANDS LOW IN THE LIST OF STATES IN THE PREVENTION OF BLINDNESS IN NEWBORN BABIES. OPHTHALMIA HAZARDS EYESIGHT

According to Dr. Andy Hall, Director of Public Health, ophthalmia neonatorium, an eye disease frequently leading to blindness in the newborn, is fifteen times more prevalent for every thousand new-born babies in Illinois than in New York, eleven times more prevalent in Illinois than in Missouri and six times more prevalent than in Pennsylvania. This is disconcerting in view of the fact that a couple of drops of prophylactic solution placed in the eyes of infants immediately after birth are all that is necessary to prevent both the disease and the danger of blindness.

The law in all of these states concerning the furnishing of free prophylactic solution and the reporting of ophthalmia neonatorum is the same but in the states of Pennsylvania, Missouri and New York the law compels all physicians and midwives to instill the solution into the newborn babe's eyes while in Illinois the law is simply permissible with no penalty attached for failure. Hence the disgraceful, expensive incidence of blindness in Illinois from a well known, easily preventable disease.

Last year Illinois had 561 cases of ophthalmia neonatorum reported, a rate of 4.3 per 1,000 births. Only four other states in the Union had a rate above 1 per 1,000 births.

During the last two school years 10 cases of blindness among first grade pupils have been definitely traced to ophthalmia neonatorum in Illinois. This indicates that about 1 case of ophthalmia neonatorum out of each 100 reported terminates in permanent lifelong blindness of the infants affected.

During the last 7 years 3,402 cases of ophthalmia neonatorum have been reported in Illinois. It appears, therefore, that not less than 34 children have been rendered permanent blind from this cause in Illinois since 1923.

Ophthalmia neonatorum can be prevented by the simple process of dropping in the eyes immediately after birth a few drops of a prophylactic solution. The State distributes free a prophylactic in the form of silver nitrate. It is available upon request addressed to the State department of health at Springfield, or from any of the 500 agents located in all counties and larger cities.

Perfectly harmless, the prophylactic should be used universally as a precautionary measure. To insure its general use a law making it obligatory upon physicians and midwives to use the silver nitrate in all cases except where parents are willing to sign contracts absolving the attendant and the State from all responsibility is needed. The present law makes the reporting of cases and prompt treatment compulsory.

The counties in Illinois now are paying out more than $1,000,000 to support 4,500 blind pensioners, many of whom were blinded as the result of this preventable disease.

DO YOU PAY YOUR DOCTOR?

The man who takes his automobile to a garage for a good overhauling or even a surface cleansing doesn't expect to recover his property until he has paid the mechanic's bill. With the doctor, now, it's different. The doctor is mechanician, engineer and chief bottle washer for the

ailing human frame. Yet does he get paid when his work is done? Yes, if and when.

According to "America's" editorial columns, the Metropolitan Life Insurance Company has made an interesting survey among its millions of policyholders. This canvass reports that the average annual payment by the average family to its physician was $140. Only the doctor himself knows when and after what delays this sum was finally paid to him.

Says the commentator wisely:

"Now the cost of repairing the human machine engenders one of the most interesting problems of the day. It is a most important factor in the family budget. From very many parts of the country the report has come that, after the bill for medical services has been rendered, the family physician, who floated into the house with healing upon his angelic wings, assumes the menacing part of a Shylock.

"That medical, hospital, and surgical fees do impose a terrific burden upon some families is beyond all question. To many a man working for a salary, the physician's order to go to a hospital for an operation, is worse than a decree in bankruptcy. It means, in many instances, the loss of his job, and a period in which bills pile up so high that he must work for the rest of his life to pay them.

"This fact is recognized by the profession. For several years medical, surgical and hospital committees have been surveying the field, and as they are animated by an honest purpose, we can rely upon an accurate and intelligent diagnosis of a very serious social problem. But it has already become apparent that the reason of many a heavy hospital bill is the fact that the patient and his family have demanded unnecessary, and even luxurious, accommodations and special service. Even when they are sick, some people never lose their ambition to keep up with the family of Jones.

"One aspect of this problem should not be lost sight of. If some physicians demand, and collect, exorbitant fees, others never receive the modest fees which they ask. Every profession has its list of non-paying clients, but the physicians probably have the longest catalogue. Men who have been snatched from what Mr. Toots would designate as the Cold and Silent Tomb, are so jubilant that they are quite unable to think of anything so prosaic as a bill for professional services rendered. Besides, now that the crisis is safely passed, they are too busy arranging a trip to Europe.

"Most families have a tale of the Exorbitant Physician. There is such a creature. But there is also the physician who comes home tired out after a long day, to wonder where he can scrape enough money together to meet his office rent. In his behalf, we would urge the obligation, sanctioned by all law, human and Divine, to pay one's debts as promptly as possible."

ANNUAL MEETING OF INTER-STATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

The International Assembly of the Inter-State Postgraduate Medical Association of North America will be held at the Municipal Auditorium, Minneapolis, Minnesota, October 20-21-22-23-24, 1930.

Detailed information relative to the meeting can be procured by writing Dr. Edwin Henes, Jr., executive secretary, 445 Milwaukee St., Milwaukee, Wis. See advertisement on page 2 this issue.

Correspondence

LAW ON COMMITMENT OF INSANE

Chicago, Ill., June 12, 1930.

Dr. J. R. Ballinger,
Chairman, Medico-Legal Committee,
Illinois State Medical Society,
Chicago, Illinois.

Dear Doctor Ballinger: In view of the fact that a number of suits have recently been filed against physicians for damages for false arrest in connection with the restraint of persons alleged to be insane, I thought it might be of interest and benefit to the members of the Illinois Medical Society if I should write you a general statement of the law governing the liability of physicians in such cases, and some practical suggestions for the avoidance of trouble and embarrassment.

Paragraph 2 of Chapter 85 of Cahill's Illinois Revised Statutes 1929, provides:

"Except as hereinafter provided, from and

after the passage of this Act no insane person, or person supposed to be insane, but who shall not have been legally adjudged to be insane, shall, by reason of his insanity or supposed insanity, be restrained of his liberty: Provided that this section shall not be construed to forbid the temporary detention of an alleged lunatic for a reasonable time, not exceeding ten days, pending a judicial investigation of his mental condition."

Paragraph 3 of the same statute provides:

"When any person shall be or be supposed to be insane, any reputable citizen of the County in which such patient resides or is found may file with the Clerk of the County Court of said County a statement in writing, under oath, setting forth that the person named is insane and unsafe to be at large, or suffering under mental derangement, and that the welfare of himself, or others, requires his restraint or commitment to some hospital or asylum for the insane; the said statement must be accompanied by the names of the witnesses (one of whom at least must be a physician having personal knowledge of the case) by whom the truth of the allegations therein contained may be substantiated and proved: Provided that when it shall appear by such statement that the person alleged to be insane has not been examined by a physician, the Judge may appoint a qualified physician of the County to make such examination and allow him compensation therefor, not exceeding five dollars, which shall be taxed and collected as here provided in respect to other costs in proceedings in inquest of lunacy."

In a comparatively recent case decided by the Supreme Court of Illinois, Crawford v. Brown, reported in Volume 321 of the Illinois Supreme Court Reports at page 313, it is said concerning this statute:

"Our statute does not authorize members of the family, doctors and nurses to commit a person to an institution for the insane without the authority of a judgment of court. Temporary detention or restraint of an alleged lunatic is permitted for not exceedingly ten days pending a judicial investigation, when the safety of the patient or others requires it.

* * *

"The weight of authority appears to be that an insane person may, without any adjudication, be lawfully restrained of his liberty when to not do so would endanger his own life or the life of others, but such right to restrain is limited to cases of actual insanity and immediate danger. Insanity which does not render the insane person dangerous to himself or others is not a lawful excuse for restraint without a judicial proceeding. A private person who applies such restraint must act upon facts—not suspicion or belief,—and takes the responsibility of an error of judgment. Some cases hold that relatives of one who is insane may commit him without judicial proceedings if they act in good faith for the insane person's benefit, but it seems evident in such cases the statute was different from ours, under which only a court can adjudge one insane. Under our statute no insane person shall be restrained of his liberty unless he has been legally adjudged insane, except that temporary detention of an alleged lunatic may be permitted for a responsible time, not exceeding ten days, pending a judicial investigation of his mental condition. By practically all authorities it is held that such imprisonment or detention without an adjudication is only authorized where the condition of the person is such that restraint is necessary for the protection of the insane person or others from his violence."

This decision is in harmony with the judicial authorities of other States.

The prudent physician faced with a situation suggesting the restraint of a person alleged to be of unsound mind will make careful inquiry to determine—

1. If the person has been adjudicated (that is, found by the judgment of a proper court) insane. (Note: In such case, the physician can act, according to his best judgment, at the direction of the conservator or custodian appointed under order of court.)

2. If the person has not been so adjudicated, whether he is suffering under such mental derangement that he is so dangerous to himself or others that his restraint is required. (Note: In determining this question, the physician can not rely on hearsay, not even on the statement of relatives, but must ascertain the *facts* for himself.)

If the physician makes a preliminary statement giving it as his opinion that such person is of unsound mind, and the alleged lunatic is taken into temporary custody, the physician should ascertain the disposition of the case

(within ten days thereafter) before giving further directions as to restraint or compulsory treatment. If the alleged lunatic has been adjudicated, the physician should act only at the direction of the duly appointed conservator or the custodian or upon a court order.

Wherever possible, the physician should protect himself against the assertion of a claim of malicious interference by securing a signed statement from the nearest relative of the alleged lunatic, requesting the physician's examination and advice.

Yours very truly,

FRANCIS X. BUSCH,
Attorney.

231 S. LaSalle Street.

PERFORATING ULCER OF FOOT IN DIABETES.—Dean Lewis (*Southern Medical Journal,* 20:424, June, 1927).

There occurs in diabetes a peculiar perforating ulcer of the foot which in many ways resembles the perforating ulcer occurring in tabes. Many of the cases, however, are strictly speaking, ulcers which have followed a circumscribed phlegmonous inflammation of the skin and have refused to heal because the diabetes has not been controlled. There does occur in diabetes a typical perforating ulcer not associated with tabes. This ulcer is usually located upon the sole of the foot, just back of the head of the fourth metatarsal bone, has calloused margins, and is deep and crater-like. Frequently it is not surrounded by anesthetic skin. In general appearance this ulcer resembles that occurring in tabes or upon the heel after division of the sciatic nerve. It may develop rapidly or relatively slow. Diseased capillaries have been found in the skin adjacent to the ulcer. It is quite probable that this type of ulcer is due to the same factors as the perforating ulcer in tabes. It develops at points exposed to pressure. Nerve lesions are also common in diabetes, although the skin surrounding such an ulcer is not always anesthetic. In not a few instances the destructive process extends to the head of the metatarsal bone, usually the fourth. This may become sequestrated without any marked inflammatory reaction.

GALL-STONES AND DIABETES.—Paul L. Hudson and William F. Lake (*Clinical Medicine and Surgery,* 34:253, April, 1927).

Vogel found that in 62 per cent of all cases of acute pancreatitis there was an associated gall-bladder infection. Many other authors have called attention to the frequent concurrence of these two conditions.

B. F. Jones has reported a group of diabetics whose clinical course and sugar tolerance have been greatly benefited by surgical attention to diseased gall-bladders. He advocates the careful search for hidden infections, especially in the gall-bladder, in all cases of diabetes.

Many cases of essential hypertension, especially in women of over weight, have frequently been relieved by operation on the gall-bladder.

CASTOR OIL, QUININE, AND PITUITARY EXTRACT IN THE INDUCTION OF LABOR.—Albert Mathieu (*American Journal of Obstetrics and Gynecology,* 13:223, February, 1927).

A series of 91 cases is reported in which induction of labor was successful in 96.7 per cent with castor oil, quinine and pituitary extract. There were no deaths, either maternal or fetal.

The author deems it best to modify the method advocated by Watson in that only 3 minims of pituitary extract instead of one-half to 1 c.c. should be given. Also, the first does of pituitary extract should be given as the enema is being expelled. The attempt at induction should be continued over a longer time than that advised by Watson.

MILD DIABETES AND ITS POSSIBLE CURE.—George H. Tuttle (*Medical Times,* 55:90, April, 1927).

In its earlier stages diabetes is not a fixed disease, as it consists only of slight variations of the normal sugar machinery; without permanent anatomical changes. It does not become a fixed disease until acidosis is firmly established in its chronic stages. Mild cases represent 75 per cent of all diabetics. Most of them never go to the hospital during the early stages.

Tuttle believes that too much attention and money is wasted upon the hopeless severe hospital cases, while the 75 per cent mild diabetics who could easily be cured, gradually progress into worse conditions and keep up the supply of severe diabetics and coma deaths. An attack of mild diabetes can be cured as thoroughly as an attack of pneumonia. Chronic diabetes is incurable. Gradual additions of carbohydrate food stimulate the islands of Langerhans to produce more insulin, whereas undernutrition and exogenous insulin merely rest them without causing increased production.

ESTRUS HORMONE UNITS.—Katharine H. Coward and J. H. Burn (*Journal of Physiology,* British, 63:270, Aug. 8, 1927).

The authors applied the principles laid down by Trevan to the investigation of the rat and mouse unit, and for this purpose examined one sample of ovarian extract on 90 rats and 70 mice. The investigation showed that the variation in the rat unit or the mouse unit may be as great as 1000 per cent. The unit is redefined as the dose required to produce estrus in 50 per cent of ovariectomized animals. The relation of the average rat unit to the average mouse unit is one. The average unit is the same whether the injection be made as a single subcutaneous injection, as a single intraperitoneal injection, or as a triple subcutaneous injection of which the separation injections are made at intervals of four hours. Single animals, injected once a fortnight with the same dose, vary considerably in their response.

Original Articles

A PROFESSION—INCORPORATED*

CHARLES B. REED, M. D.

CHICAGO

"The practice of medicine from its earliest inception has been a peculiarly personal pursuit. The doctor comprehended all the available information of his generation and his visit, his examination and his elementary laboratory work represented all that could be known of human disease."

Even at present individual practitioners can easily and successfully care for 85 per cent. of medical business without the aid of assistants or expensive apparatus. These men are as earnest, as right-minded, and as fully abreast of their time as their eminent predecessors. They feel the moral side of medicine acutely and cherish it. They feel the honor of service, the claim of high ability, usefulness, altruism, and the sense of responsibility for the confidence and trust reposed in them. In return, they should and do receive independence in their vocation, the satisfaction that follows problems by distressful effort solved, together with the respect and affection of the community. These men are the backbone of the medical profession today and they expect the proper reward which is the natural aim of normal men. Their work is vital to public welfare; and if the acutely sick are to be fittingly cared for a medical career must not be closed or made unattractive to their physicians.

The growth of the modern technique of medicine, with its numerous diagnostic procedures, meant, of course, that the sick received more extended attention than was possible before. But with this development a division of labor was immediately necessary, in order to increase the precision and effectiveness of the methods of treatment which have been devised to supplement the complexities of investigation.

This multiplicity of function not only took from the doctor the full medical intelligence which came from the performance of the earlier technique, but naturally added much to the expense. Furthermore, in addition to the exactions which modern methods demand for general practice there is a minority—15 per cent. perhaps—who require specialists, elaborate equipment and a cooperative organization by which to refine once more the diagnosis and once more the cost is enhanced. As soon as this problem arose the physician was faced with the necessity of giving his patient an inferior service or undertaking a large monetary outlay. To reduce the cost of medical care of which the physician's share is only 25 per cent., and make the service available without diminishing its value some form of organization was requisite, although the process seriously interfered with the highly desirable features of individualistic practice.

Thus it came about that large hospitals were built, health departments were expanded, health demonstrations increased, independent clinics created, the clientele of dispensaries was enlarged and government bureaus established—bureaus which were innocent enough to casual inspection but capable of becoming Procrustean beds overnight.

To these numerous enterprises which for the most part were conceived and begotten by doctors themselves must be added the eleemosynary and philanthropic endowments managed by the various foundations and applied to the diagnosis and treatment of disease and to public health work.

These foundations, which in some cases seem to be unwisely projected or imprudently administered, have sucked into the maw of charity a social class which formerly paid its own doctors and lawyers, and although the medical man is the most essential element in the operation of these benefactions, yet his function and indispensable contributions are completely overshadowed by the magnificence of the monetary management.

The necessity of combining under one roof a systematic division of labor with a minimum of expense in collecting the required information produced a situation which the private practitioner could not encompass as an individual. This dilemma was solved only to lead medicine into another and worse predicament.

Institutions constructed for and more or less necessary to the 15 percent. who always need the service of specialists and elaborate equipment, are today thronged by the 85 per cent. who could easily be cared for by the general practitioner. This 85 per cent. apparently are not to be denied. They insist upon having the last word in health

*Presented before a joint meeting of the Section on Medicine and Surgery at Annual Meeting of Illinois State Medical Society, May 21, 1930.

service, superfluous and expensive though it be, for the same reason that they burden themselves with pianos, automobiles and radios on the partial payment plan. The 85 per cent. substitute desire for foresight. They define "thrift" as "a dollar down and a dollar a month." They embrace eagerly the opportunity to pay for the luxury, only to wail bitterly over expenditures for the uninvited necessity of medical care.

Establishment of pay clinics and diagnostic clinics in connection with medical schools and hospitals, still further restricted the field of the individual doctor though these departments are vital to high grade instruction. For the most part these institutions have confined their activities rather strictly to "people without means," and to this the profession offers no objection so long as the work is carried out in good faith. But, when dispensary clinics are frequented by the well-to-do who come in taxicabs, even the most "unbusinesslike" medical man soon becomes aware that this confidence is grossly abused!

For years large industrial organizations, like factories and railways, have furnished surgical relief to injured employees. This practice has so clearly a legitimate basis that the profession finds it unobjectionable unless the service is extended to the families and friends of the workers. Co-operative bodies like labor unions are also practicing medicine through medical bureaus with salaried physicians.

Medical centers for pay patients, often started for educational purposes, have frankly gone into the business of attending medically to anyone who applies.

The practice of medicine by organizations is, therefore, by no means new, and "medical men and medical institutions alike stand at the sharp line which divides two merging types of professional evolution—an old system built up by individual contributions and a new system made up of organized effort"—(Heyde). Such an emergency demends careful consideration before judgment is possible.

On the one hand, "scientific medicine must keep step with social progress, and not place itself at a disadvantage through overinsistence on tradition and traditional methods." On the other hand, medicine must remember that it belongs normally to the realm of private initiative and enterprise. To balance the two is difficult, for the principles upon which the profession of medicine is founded are inherently hostile to its opportunities. There is always a conflict between individualism and altruism, a professional problem which the doctor knows and accepts in advance. But common wisdom would suggest that he do not let his idealistic brain deprive him of his livelihood—nor the children of magnanimity or philanthropy devour their own father!

Certain advantages of co-operative activities, under particular circumstances and for special purposes, can be freely conceded as just and progressive expansions of medicine. But co-operative forms must be as clearly differentiated from the corporate practice of medicine as charity is differentiated from profit-making practice.

The "corporate practice of medicine" is in fact a term somewhat difficult to comprehend or employ because it is used loosely and has never been accurately defined. A corporation has been explained as an artificial person created by law, consisting of one or more natural persons united in one body under such grants as secure a succession of members without changing the identity of the body, and empowered to act in a certain capacity or to transact business of some designated form or nature like a natural person.

Bouvier's Dictionary of Law states that "It may be laid down as a general rule that a corporation may, within the limits of its charter or act of incorporation, express or implied, lawfully do all acts and enter into all contracts that a natural person may do or enter into, so that the same may be appropriate as a means to the end for which the corporation was created."

Obviously such a ruling establishes legal powers so broad as to be unsafe to the community so far as it is applied to professional actions. For, under this interpretation, the butcher, the baker and the candlestick maker, together with John Doe and Richard Roe could incorporate—for instance—"The Law Extension Institute," and by hiring a group of indigent or mediocre lawyers at low cost could quickly build up a highly profitable law business through nation-wide advertisements of their desire and purpose to bring legal service within the reach of the humblest litigant.

The right to practice law, however, is earned by hard study; it is attested by a certificate from the Supreme Court, and protected by registration. The practice of law is not a lawful busi-

ness except for members of the bar who have complied with all the conditions required by a statute and the rules of the courts. These conditions cannot be performed by corporations. The justice of this position is fortified by the honorable traditions of the bar, the welfare of the community, and by the evils which would follow the destruction of these restrictions.

The same reasoning applies to medicine. The ethics of the medical profession declare for equal opportunity and the equity of conduct between doctor and patient and between members of the fraternity; but corporations are not restrained by any canon or code of practice from soliciting business. Neither are they forbidden to pay commissions for having business referred to them.

The corporation employee is bound by the economics of business, and his relation to his employer and to the client is conditioned entirely by these rules. The economics of a profession and of science are necessarily different, because a different end is sought. Each is pertinent and expedient for its own purpose. It is foolish, and an inevitable cause of conflict, to apply the economics of one field to another for which the ethics are unsuited.

The practice of medicine is not a business, but a personal right, restricted to men whose good character and special qualifications have been ascertained and certified to after a long course of study and by license through a state board appointed for this duty. The right to practice medicine is a privilege earned by the individual and granted by the state for merit, and since these conditions cannot be met by a corporation, it is obvious that corporations cannot legally and should not morally engage in medical business for profit. Furthermore, to hire doctors or lawyers to carry out provisions of practice which corporations cannot legally or personally perform is a mere evasion which the state should not tolerate.

As the writer has stated elsewhere, even though such medical employee is well taught and reasonably competent, he has lost the essential relation which should exist between the professional man and his conferee. He has necessarily submerged his professional identity in an organization primarily commercial in character; an organization devoted to mass production which has neither a conscience to guide, a body to kick, nor a soul to save.

The conclusion seems clear to the writer that the practice of medicine for livelihood is not the proper function of corporations, and should be opposed by the medical profession, not simply for its own welfare, but because the public need the best medical service which can be supplied—a service which in practice is furnished by corporations only under very unusual conditions and then only at the price of demoralization of the independent private practitioner, which would be and indeed is a public calamity.

The discussion of this point cannot be wholly convincing without concrete illustrations, and there is already at hand, unfortunately, a glaring example of corporate practice in actual operation which supplies a hypothesis.

Since this particular phase of corporate practice has endless possibilities not only for bringing confusion into medicine but a still greater confusion into the public mind, it seems necessary to present more of its aspects and potentialities for serious examination.

Let us take a city of magnitude and opulence wherein a young medical man arrives after the war, with an undoubted talent for organization and an unshrinking desire to make his fortune. He connects himself with a teaching institution, only to be dismissed for unprofessional conduct. He scrapes acquaintance with a grocer, a broker, a realtor, a manufacturer, a clothing merchant and other men of means and persuades them to join in establishing a clinic for venereal diseases. Allured by the promoter's promises these laymen form a board of trustees, adding to their number a lawyer who apparently does not sympathize with the efforts of his local Bar Association to abate the corporate practice of law through legislative enactment. The promoter becomes the Medical Director.

The clinic is incorporated as "not for profit" —ostensibly as a philanthropic enterprise to reduce the high cost of medical service and bring relief to all who may apply. A benevolent name is chosen. The doors open and the corporation begins to practice medicine. Being incorporated, the ethics of medicine have no significance and full page advertisements of social diseases are flaunted in the public press; advertisements so flagrant and so essentially a piece of quackery that the newspapers refuse to publish them un-

less the names of the honorable board of trustees are also given as a guarantee of good faith. This board is composed undoubtedly of honest individuals, conscious of the propriety of their intentions, but the very innocence of their motives as much as their ignorance leaves them completely at the mercy of their Medical Director. The advertisements appear therefore with their names attached and thus promulgate a public belief in the medical competence of the clinic, which the facts of its medical practice by no means warrant. A medical staff is assembled. Since high grade physicians can not be had the positions are filled from the ranks of the inexperienced, the financially embarrassed and otherwise unsuccessful members of the profession. Neither the staff men nor the Director belong to any reputable medical organization. These employes are all salaried, and graded in importance and value to the clinic by their zeal in co-operation with the schemes of the Medical Director and their speed in performance of their duties. This speed is checked daily at the Director's office and the number of cases per hour of each operator is published on the bulletin board. The men are urged by competition to do a maximum amount of work in a minimum of time. Erstwhile staff members allege that although the clinic is incorporated as "not for profit" no expedient is left untried which serves for the attainment of profit. The attendants are required to punch a time clock four times a day and a minute's tardiness is a serious offense. Stress is laid upon low salaried employes and large mass production and the efficiency of this mechanical treatment is still further weakened and degraded by the fatigue of the overworked human machine and the total absence of personal responsibility. Necessarily the patients suffer. Applicants for information are diagnosed as ill who are not sick and never have been. Prescriptions are issued for drugs which are not indicated. Instrumentation is used where it is not required, and instruments contaminated or incompletely sterilized convey infection from one patient to another. Extra items of technical attention and uncalled for procedures enhance the expense. Injudicious methods prolong the treatment in some cases, while in others the attendance is purposely protracted for commercial reasons. A patient who could be safely dismissed by a regular practitioner in from five days to five weeks is kept under daily and triweekly treatment for five months. There are no free cases. Despite the philanthropic claim in the articles of incorporation, the *indigent are sent elsewhere.*

Through the inadvertence, ignorance or unskillfulness of the staff men, or possibly from the law of chances, complications arise which are referred to a specialist unofficially but no less firmly affiliated with the institution by a monthly bonus. This man exacts a sanguinary fee for his operation. That the alleged purpose of the corporation is to reduce the high cost of medical service apparently appeals to him merely as a pleasant philosophical speculation—if he thinks of it at all. This hypothetical case obviously has many aspects. The extensive advertising attracts a huge volume of business which enables the clinic to underbid the regular practitioner but the ostensible advantage in price to the patient is easily offset by protracted treatments. Under these conditions the clinic quickly achieves that commercial success, which is the aim of good business. The income grows steadily. The receipts exceed $200,000 per year and a sinking fund of $800,000 is established.

The medical profession protests strenuously that the corporation has no right to practice medicine; that such an act is beyond its legitimate competency, "ultra vires." Committee after committee meets representatives of the clinic and complains that the methods employed are unfair to the medical profession and unfair to the public. In these conversations the medical group insists that purely medical matters must be managed by medical men. They argue that a medical board should be appointed to supervise the personnel and treatments of the clinic and that advertising should be strictly educational in character and wholly under the control of this medical board.

The profession takes the position that the clinic is not in reality philanthropic and that it does not reduce the cost of medical service, since the Director can and *does* in all truthfulness boast that he gets more money from his patients than any regular practitioner.

The profession protests against the character of the advertising, the mass production methods, and the slovenly, unindividualized treatment. It maintains that the lack of conscience, of personal pride, and of ethical ideals in such a clinic

would always be incompatible with honest and competent medical service.

The profession represents that the large volume of business done by the clinic robs the medical schools of valuable clinical material, and denies the medical student an important source of instruction and that this in time would bring an inferior grade of treatment to the public service. It further maintains that under existing conditions the public is not benefited, but on the contrary damaged in purse, in morals and in health. The opinion was submitted that the sole basis of such unrestrained competition could only be the motto that "business is business," and that the clinic is engaged in catering to an economic desire as if no ethical criterion were involved or even remotely applicable.

The profession further asserts that such corporate practice is distinctly injurious, since efficiency and common morality cannot possibly exist where competition is unregulated. It contends also that such medical practice by a board of lay trustees with low salaried employes is pernicious and destructive to the general welfare.

Attention is called to the fact that while the clinic is incorporated as "not for profit," yet it is conducted on a wholly profit-motive basis and is building up a remarkable surplus for such a supposedly altruistic enterprise.

The profession affirms also that financial success is no more a criterion of medical ability in a corporation than in men; that corporate practice is by no means a guarantee of medical excellence; that a corporation can as easily mislead by its advertising as the individual charlatan; and that the example of the successful commercial clinic would lead to the formation of similar centers elsewhere. If in Illinois, why not in Texas or New York? If so profitable in venereal disease why not in diseases of the heart and lungs?

To advertise widely, to buy cheaply and in quantities are accepted principles of success in mercantile affairs. In America, the spirit which the Germans call *"Fordismus"* not only sets the views of life and the pace for business, but also strives to regulate the producers and the professions. Thus the action of the buyers for Sears, Roebuck, Henry Ford, and other chain-store or large unit production magnates in "remorselessly using every expedient to drive down the price of cotton fabrics and to place the burden on the growers," as the Senate investigating committee reports, may explain the extraordinary *attention* and possibly the ultimate purpose of commercially trained philanthropists to reduce the legal and medical professions to *Fordismus,* whereby the marmoreal immobility of standardized mediocrity is perpetuated. In the medical corporation I am describing the lay trustees hold this view. The Trustees defend their passion for publicity on the ground that *soliciting* is an essential part of such a business, forgetting evidently that in large cities it is no more difficult to find a venereal clinic than the exciting cause for this necessity.

At all events in our present hypothesis the lay Board of Trustees is not averse to the arts of their Medical Director. The many valid reasons against the corporate practice of medicine fall upon deaf ears.

The protests of the Medical Society bear no fruit. The negotiations get so far and then something happens or someone acts to prevent further meetings with the committee. Is it the Medical Director? The profession is not informed.

The Medical Society persists, however, in spite of the unfriendliness and lack of success. Ultimately professional patience is exhausted and the matter comes to an issue. After repeated warnings to the consulting surgeon that his brazen violations of medical faith would bring him before the bar of the Society, charges are preferred against him and he is dismissed from professional fellowship.

That the sentence is just, is evident from the unanimity of the vote. That the penalty is severe is manifested by the frantic efforts of the culprit to escape. That the action is wise, is apparent from the universal approbation of medical authorities and discriminating laymen as well as the sequential effect in publicly ventilating the whole controversy; an effect which is neither foreseen nor intended.

The exemplary disciplining of this man focuses the attention of the people upon the vexatious and unfair conditions under which the clinic operates, and one of the philanthropic Foundations is moved to enter into the affair as an intermediary.

Through the influence of this body the lay Trustees at length evolve some understanding of the situation and take action. They select a

board of reputable physicians to co-operate in the task of bringing to their enterprise a belated but much-to-be-desired respectability. They begin to realize the significance of the principle repeatedly put forth by the Medical Society; a principle on which the whole profession has long been convinced, namely, that the practice of medicine by lay groups is socialistic, bureaucratic, inefficient, and totally at variance with American ideals. In fact, medical ministrations by untrained individuals or groups are an unfortunate innovation brought over to us from public health experiments which have failed in other lands. They are alien and unassimilable to America.

The Medical Board, by virtue of its warrant, now begins to function and the attitude of the clinic undergoes a change. It is proposed to reorganize it thoroughly and restrict its field of operation definitely to social diseases. The advertising, put under the censorship of the Medical Board, promises to become steadily less commercial and more educational in character until finally it ceases to be commercial altogether. The staff men are to be named by the Medical Board and consultants appointed to eradicate the flagrant medical faults and to improve and supervise the treatments. Plans are projected also for utilizing the patients in a measure for clinical instruction.

This all sounds promising and the sincerity of the proposals cannot be questioned, but whether it solves the problem in our hypothesis is doubtful so long as the outlaw Director is retained and if, as he declares, he can twist the Medical Board to his purposes as readily as he has beguiled his trustees. It is needless to add that the profession has perfect confidence in the Medical Board.

The distressing results of corporate practice in this hypothetical instance are the direct sequel to interference in medical affairs by men who are professionally untrained. The greater their purity of purpose the more readily are they victimized by smooth-tongued charlatans. Since a lay board cannot know the business of medicine, it is desirable that such a body should meddle as little as possible with those who do know it. Success in medical philanthropy demands whole hearted obedience to the rule that *medical matters must be managed by medical men*, and these men furthermore must be in good standing with their professional brethren.

If it be urged that physicians are not good business men, it is far more true that business men are *not* good doctors. The conspicuous difference in attitude between business man and doctor lies in the fact that a medical man is astutely unwilling to mix in matters wherein his training is not justifiably adequate. In the management of his own practice the American doctor is unexcelled. The percentage of failures among doctors is far lower than among business men. In the management of hospitals during the war, or of medical groups, or wherever indeed the responsibility is put upon him, the physician achieves notable success. According to all the rules of good business, medical men should therefore have a large representation on hospital boards, yet this condition is rarely found. The situation is anomalous. By what strange alchemy does great wealth or a successful venture on the stock market confer upon anyone a comprehensive knowledge of disease or the ability to solve abstruse medical problems? How valuable is the testimonial of a member of the ministry or of the Association of Commerce on the medicinal excellence of the nostrum or patent medicine he feeds to his confiding family? All in all, about as valid as the opinion of a medical man on the fluctuation of stocks.

Under such conditions does it seem unreasonable that medical men should ask for support and championship which will prevent the threatened industrialization of medicine by mass production? Nay, more, should they not demand the introduction of some mites, motes and atoms of professionalism into business? The hypothetical case of corporate practice herein described is fortunately unique in lawlessness, but numerous degrees, grades and variations of breach in this great principle can be found wherever laymen, singly or in groups, undertake the practice of medicine through salaried employes. In fact there is no way in which such an organization can be conducted safely and fairly unless the advertising and the profit-motive be wholly eliminated and the clientage meticulously sifted.

What is the remedy? On the one hand is the overwhelming necessity of maintaining the private practitioner since there is no better means

of giving medical service to the American people than our professional individualists offer. On the other hand is the problem of caring for the 15 per cent. who need especial skill in diagnosis and treatment. Again people must turn to the medical profession rather than to a corporation of laymen who employ medical men on salaries regardless of whether such corporations be for insurance against illness, for the treatment of disease or as a philanthropic foundation which acts as a middle man between the doctor and his patient. In every case the doctor is the first essential. The doctor is the one, primary indispensable factor. If the health of the people is to be efficiently conserved, ambition, independence and a proper economic reward must be assured to this man.

This brings up the question of co-operative medical practice which in its most satisfactory form is represented by hospitalization and by medical groups.

The first requisite for the relief of the 15 per cent is the opening of more hospitals and the staffing of them by men of the highest class. If the community cannot do this, if the foundations will not, then the profession must undertake the work. The idea is prevalent that hospitals cannot be self-supporting under the hard conditions of standardization by external agencies. This is not true. There are many hospitals for pay paients, indirectly or actually under the management of physicians, that meet expenses while some even make a profit. These hospitals live without endowment and without the aid of charity except for their indigent clientage, and they fulfill adequately the hospital needs of their people. Many hospitals have been established in remote districts and they are paying their way. These institutions are controlled and usually owned by physicians, the alleged unbusinesslike physicians, who built them because there was no one else to do it.

The hospital is to the invalid what the court is to the litigant, the place where wrongs should be righted. Some patients go to hospitals from choice and others from necessity, but all get the best that science in that community can offer. Good hospitals can supply complete diagnostic and treatment facilities to all ethical practitioners in a given district.

Physicians who are uncertain about the conditions which confront them can bring their patients to such a center and obtain a diagnosis and an interpretation of the findings, if necessary, without prejudice to such physician. After this service is rendered the patient can be turned back to his doctor for the administration of the treatment indicated. All types of cases can be received and none refused for economic reasons. Such hospitals should be endowed or so felicitously financed that the best service could be rendered for a compensation which is diminished but not pauperizing.

Next to the hospitals in importance are the combinations of doctors who unite in a kind of medical partnership so that superior service may be furnished at a minimum of expense. No doctor believes that he can acquaint himself with all the refinements of medical knowledge which modern scientific discoveries have made available. Intimacy with any one of the specialties is often the study of a lifetime.

Keenly conscious of this condition it will happen that a group of two or more men form themselves into an associative relationship which has an energetic functional utility and a common purpose without always a legal entity. Such an association of men for a shared design constitutes the only source of authority which carries with it an ethical obligation and the possibility of a moral co-agency. Such an organization shapes in subtle ways the values each member holds because it embodies his own particular interests, but the *sine qua non* of such a combination is a highly capable general practitioner.

With this qualification, group practice probably meets the demand for medical attention of the 15 per cent. as satisfactorily as the hospitals, but such a group must remain co-operative and *not become corporate.* There are hundreds of such groups which serve their respective communities and serve them well. In an organization of this kind there is a pooling of expense for assistants, equipment, laboratory supplies and other necessities, but in addition to these physical factors the heightened efficiency must be considered. The perplexing 15 per cent. secure the quick availability of the entire forces of specialists who compose the clinic and thus receive more satisfactory service at relatively less expense as the smooth technique of good

hospitals and well equipped groups amply exemplify.

These groups wield the power and influence which follow the integration of effort by similarly minded individuals, and develop an extraordinary mastery of disease problems. Their vitality and energy are activated by the same reason as individualistic medicine, but remarkably intensified.

It must be admitted that such groups have not yet been whole-heartedly accepted by the profession at large, but probably they offer one of the most effective solutions to be found of modern medical problems and a higher evolution is always possible. At all events they have the great merit of keeping the control of medical practice in the hands of the trained profession where it belongs. These group clinics are the chief contribution of medical men to co-operative medical practice, and if individualism in medicine must perish, which God forbid, then the next best thing for public health and safety will be group practice.

In all cases, whether co-operative or institutional, whenever associations are formed for the practice of medicine and whether for profit or not for profit, the code of ethics must be observed as strictly as by the individual.

Medicine must be practiced by doctors. If an institution is under the direction of a lay board of trustees, all purely medical matters must be managed by medical men. It is much safer for an engineer to have his hand on the throttle than one of the passengers who knows nothing about engines. The staff therefore should be of reputable physicians. Treatment administered should be indorsed and prescribed by medical men. The relations of the institution to other organizations should be controlled and the financial status of patients admitted should be under the supervision of medical men. The advertising, if any, and public communications of all kinds, should be only that which the strictest, professional rules permit. The solicitation of business by or for professions today in most of its aspects is a rank outgrowth of the acquisitive instinct which is irreconcilable with moral wisdom. Not only must the cost of publicity be added to the cost of medical care, but if *one may* advertise, all *should* advertise and in the confusion and chaos thus produced our sick and afflicted will be lured into the ministrations of the man or institution with the largest purse regardless of ability or competence.

The requirements which medicine has laid down as a code of ethics are not matters of etiquette peculiar to the medical profession. They are such requirements as all professions strive to establish. Even the New York Stock Exchange forbids its members to advertise except by the publication of their names, their locations and the goods they have to offer. Such ideals distinguish the gentleman from the huckster.

The question of ethics, however, is most important to the medical profession because human life and heredity have a higher value to civilization and the community than property and patrimony.

The ethics of organized medicine is a creed rooted in the honor and unalterable principles of human relationship. "What you do not like when done to yourself, do not do unto others," said Confucius, and this maxim, reinforced by the precept and example of the First Christian has become a beacon light for civilization and a lode star for medicine.

The aspiration of the medical man takes that supreme form of morality which springs not from command nor obedience, neither from law nor curbs of convention, but rather from an aristocracy of the spirit; a morality alert to the threat of disaster but undismayed by its dreadful shadows.

With a serenity of soul superior to casual ambition, the physician seeks to bring about the alleviation of pain and suffering, the restoration of the sick, the protection of the weak, the resurrection of the fallen, the education of the people in the laws of health and prevention of disease and to bring light and hope into dark places like a sunbeam on a sullen sea.

A great corporation cannot feel a fervent charity but the individual physician will uphold the best traditions of his ancient and honorable profession unconfused by the sounding tides of strenuous endeavor. He alone is deeply aware of the instincts and wants in man which Earth and Time cannot satisfy, things of the spirit which point with uplifted fingers to the Golden Rule. Imbued with this consciousness he works out the salvation of man in a mood of vast desire untempted by remote and mystic rewards and undaunted by the Scowl of Fate.

30 North Michigan Avenue.

PATHOLOGICAL THYMUS IN CHILDREN FROM A ROENTGENOLOGICAL STANDPOINT*

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The thymus is a temporary organ, growing somewhat rapidly until it attains a considerable size, and then gradually dwindling until it is merely vestigial.

It is situated in the anterior mediastinum and lower part of the neck, between the lungs, in front of the heart, the great vessels and trachea, and reaching upward nearly to the thyroid. It appears at the end of the second month of intrauterine life. At birth it measures 5 centimeters vertically and about 7 millimeters ventrodorsally and laterally; and it weighs about 12 grams. It is largest when the child is two or three years old, and its weight at that time is 24 grams. Thereafter it slowly and steadily atrophies, and has nearly disappeared by the fifteenth year, although traces of it may be discovered in old age.

It has a rosy hue in the fetus, is grayish-pink in the infant, and later becomes yellowish. It is soft and compressible, and sags out of shape by its own weight. It is vertically elongated and is largest below.

It has two lobes, approximately symmetrical—the right lateral and the left lateral—perfectly independent of one another. Each lobe has a delicate fibrous envelop, from whose visceral surface partitions extend inward, dividing the lobe into a large number of irregular, polyhedral lobules. If the envelop is cut between the lobules, the whole lobe can be unfolded, and the lobules are then found to be arranged around a central cord, close to which they are continuous with each other, but at the periphery of the lobe are free.

A lobule consists of clusters of little nodules, which are essentially lymphatic in character. Each nodule has a cortical and a medullary portion, the lypmh-cells being more numerous in the former, and the latter containing peculiar cells (of Hassall) in nests, the large containing smaller. These medullary corpuscles are the representatives of the epithelium of which the thymus originally was largely composed, before the invasion of lymphatic tissue. A capillary network surrounds the nodule.

As the gland shrinks away the interstitial, connective tissue increases, and multitudes of fat-cells are formed, the last fact accounting for the yellow tinge of the organ during this stage.

The arteries of the thymus are derived from the internal mammary, the thyroids, the subclavian, and the carotid. The veins run to the left brachiocephalic. The lymphatic empty into the superior mediastinal nodes. The nerves come from the pneumogastric and the sympathetic.

There are three types of glands depending upon situation, thoracic, cervical and cervicothoracic, the last being the usual.

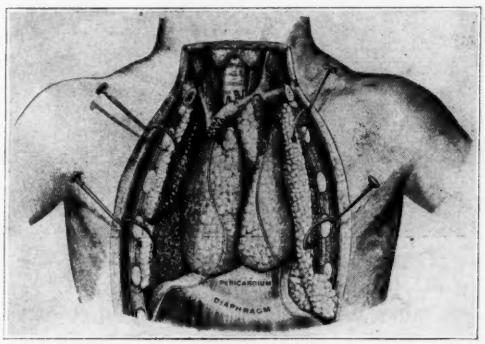

Fig. 1

Function: Much has been written and many experiments have been made in an effort to determine the function of the thymus, but at this time the entire matter is problematical. Theories have been advanced as to the thymus having an influence upon calcium content and growth of the bony structure. There is possibly a connection between the thymus and insufficiency of adrenals. Some investigators believe there is an elaboration of a thymic hormone. It has also been proven to the satisfaction of some observers that the thymus is not necessary to life and that thymectomy has no effect upon the growth and development of bone.

It is generally believed that the so-called status lymphaticus (general lymphoid hyperplasia) is dependent upon a pathologically enlarged thymus, but this is disputed. An enlarged thymus is always present in this condition, but

*Read before Section on Radiology, Illinois State Medical Meeting, Joliet, May 21, 1930.

what connection it has with sudden death from this cause has not been demonstrated. For many years it was believed that the thymus had some action intra-uterine development and in so far as I know this has never been disproven. No

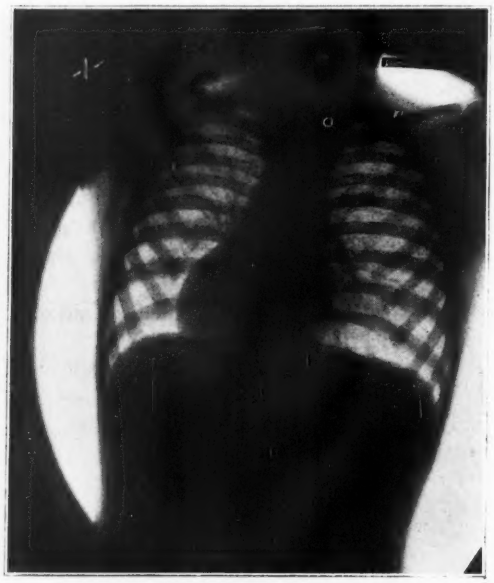

Fig. 2

one knows very much about the subject so one man's opinion is just as good as the next.

Symptoms: Stridor, dyspnea, nausea and vomiting, extreme restlessness, failure to gain in weight, infantile eczema and inanition are often found together or separately in enlarged thymus.

Roentgenological thymus: What is a pathological, or enlarged thymus? Except in cases without physical findings, which are rayed as a preoperative precaution, there should be some definite reason for therapy aside from noticeable enlargement of the gland. However, I firmly believe that cases in which careful x-ray study shows enlargement of the thymus, that the patient should be treated whether or not physical findings are present. Any shadow in the upper anterior chest in children under eight years of age which cannot be accounted for by the shadows of the great vessels, should be looked upon with suspicion, particularly where the physical condition is below normal. I believe it is impossible to set any standard and say that all on one side are normal and all on the other side abnormal.

The production of satisfactory films particularly in children under three years of age will probably require the presence of the roentgenologist unless a very unusual technician is available. Even then the services of 3 or 4 adults may be necessary before satisfactory films are obtained. Many methods have been described for holding a "crying, kicking kiddie," but I have found that a natural love for children coupled with a modicum of patience and common sense is much more satisfactory and will more often avoid the necessity for retakes. Speed, of course, is essential and it is possible to secure satisfactory films in 1/10 second exposure.

It is our practice to make films in the anterior-posterior, posterior-anterior and lateral positions, the latter principally to show possible distortion of the trachea. The supine projection is always made first as it is often possible to get this position before the child knows what it is

Fig. 3

all about. By watching closely it is possible to secure absolute freedom from motion just at the end of respiration which is desirable in securing the thymus shadow with the least possible distortion. The child lies upon his back with the

arms at the side and the head in the normal semiflexed position.

The prone position is just a little more difficult as the young patient usually insists upon looking up to see what is going on and objects

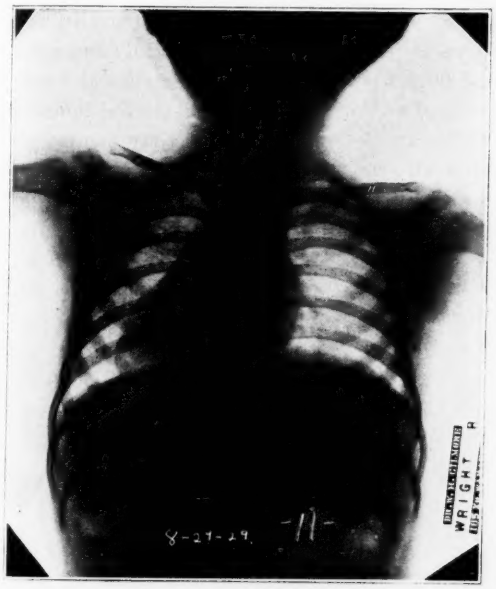

Fig. 4

very seriously to having his face held down. It is also necessary to keep the arms below the shoulder in order to avoid any possible exaggeration of the superior mediastinal shadows.

Recently much has been written about the lateral position, but as stated above its main value is the visualization of the shadows of the trachea. As Bromer of Philadelphia has aptly said, the child's arms should be behind his back in order to bring out the shadow of the trachea. In follow-up films we have found the A. P. and P. A. positions all that are necessary.

It is of course necessary to make these films rapidly and we have found that 10 M. A. at a F. D. of 36 inches and 80 P. K. V. will produce satisfactory films in 1/10 second.

In this series of cases all have shown physical signs of thymus involvement, or findings which might be considered at least due in part to pathological change in this gland and the symptomless thymus was considered in only three cases. These were rayed as a matter of precaution before operation and were considered of sufficient importance to justify radiation. An attempt has been made to secure clinical improvement no matter whether there was marked decrease in the size of the shadow or not, with the least possible dosage. In many individuals in which there has been marked improvement from a clinical standpoint it has been impossible to secure follow-up films. As so often happens when the patient seems to be well, any further examination is considered superfluous by the family.

For many years we have felt that entirely too much value has been given to high voltage and large dosage and it has seemed to us that sufficient study has not been given to what might be accomplished with comparatively low voltage with much less risk to the patient, particularly when dealing with very young children. With this thought in mind the treatment of these cases has ranged from 50 P. K. V. upward, the time ranging from 1 to 4 minutes at a focal skin distance of 15 and 20 inches, with no filtration and 1 and 2 mm. of aluminum at 5 days to

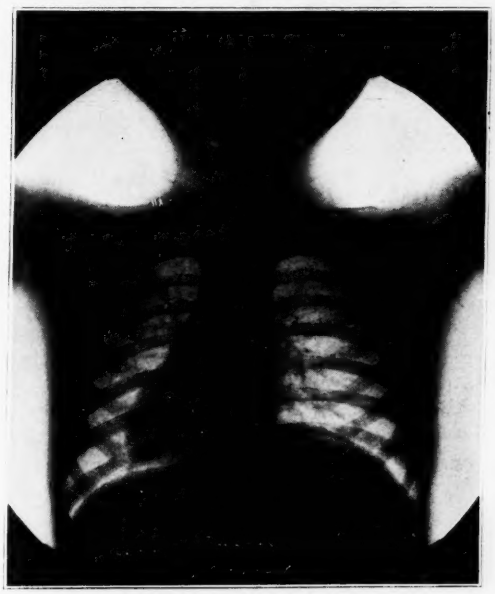

Fig. 5

1 month intervals. While the number of cases studied has been comparatively small, we believe we have arrived at what is a practical dosage in which any element of danger to the patient is eliminated. At this time we are using and ex-

pect to continue to use 100 P. K. V., 5 M. A., focal skin distance 15 inches for 3½ minutes with 2 mm. of aluminum as a filter. This dose is repeated every seven days for three sittings and after a period of 30 days follow-up films are

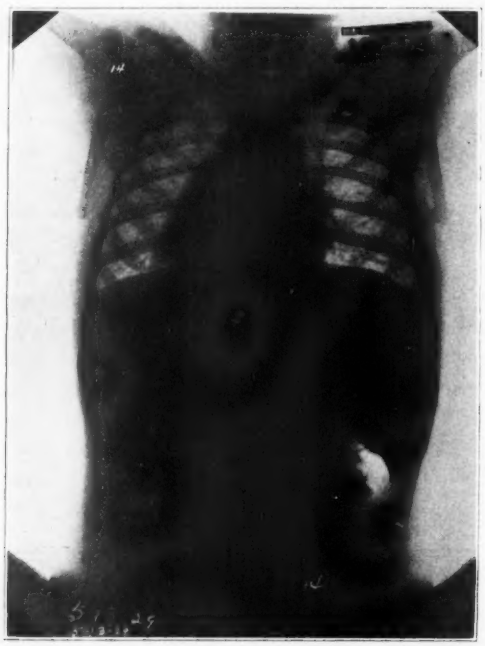

Fig. 6

made. The thyroid is protected by 1 mm. of lead foil and the ray passes through an 8½ c. m. portal to the upper anterior chest region. The dosage is considerably less than one-fourth of an erythema dose.

In a series of 64 cases with what were considered abnormal thymus shadows, ranging from 7 weeks to 6½ years, 55 were treated.

12 received 1 treatment.
3 received 2 treatments.
29 received 3 treatments.
6 received 4 treatments.
3 received 6 treatments.
2 received 8 treatments.

It was only possible to follow up 20 of these cases, for as stated above when there was clinical improvement, consent for further examination could not be obtained. In these cases, 14 showed definite decrease in the thymus diameter, 4 showed no change in the x-ray findings, but satisfactory clinical improvement, and 2 were unaffected. In the 55 patients treated 53 showed relief from the symptoms for which the child was referred.

Dr. Charles A. Aldrich of Chicago has compiled a series of 824 cases from 52 different sources which shows 739 carried to a successful conclusion through roentgenotherapy, approximately 90 per cent. cures. Our own small series shows 90 per cent. rotengenologically improved and 96 per cent. benefited from a clinical standpoint. We know very little about the real function of the thymus, but we do know x-ray therapy relieves all symptoms of pathological or abnormal change in the vast majority of cases. (I am indebted to Drs. Blatt, Bower, Wilkins, Sherry, McLaughlin, Geiger and Moore for the opportunity of studying the cases which make up this series.)

Under date of May 13, 1930, the Chicago papers carried the following item "Healthiest girl dies at Dentist's. L. F., aged 5, of Evanston was voted Evanston's healthiest child. She died

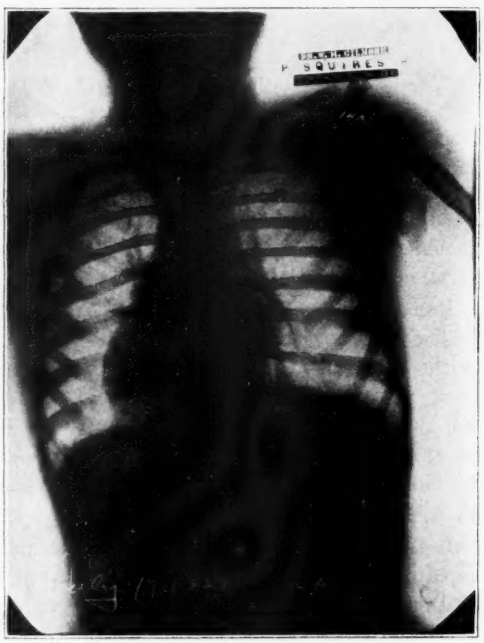

Fig. 7

yesterday in a dentist's chair due to heart failure attributed to her fear of having her tooth pulled. Because of her fear she was given an anesthetic and died on the table. A pulmotor squad worker for three hours, but she could not

be revived. A coroner's jury exonerated both doctors."

This case is typical of many which occur in all communities. The facts of this child's death suggest a pathological thymus and the vast ma-

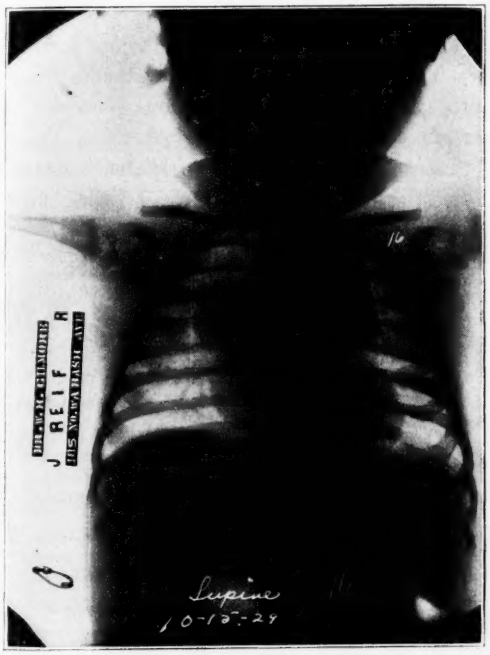

Fig. 8

jority of all sudden deaths in children at operation are due to the so-called status lymphaticus of which an enlarged thymus seems to play an important part. Whether or not an enlarged thymus is present may be very easily ascertained and if every child who is submitted to an anesthetic is rayed before an operation many lives could be saved.

In the following cases I shall attempt to show what is possible by the use of the x-ray as both a diagnostic and therapeutic measure, in cases with so-called pathological thymus gland.

Fig. 1. Is a dissection by Testut which shows the relation of the thymus gland to the pericardium, diaphragm and the great vessels.

Fig. 2. Illustrates a normal chest in a child at 2½ years at which age the normal thymus is largest.

Fig. 3. L. L., age 7 weeks. Marked dyspnea, infantile eczema, inanition and stridor. X-ray shows marked enlargement of both lobes of the thymus extending from the apices almost to the diaphragm. After the second x-ray treatment at an interval of five days the physician in charge noted definite improvement, but there was still considerable dullness on both sides of the sternum and dyspnea and stridor were still present. In this case it was impossible to complete the treatment as the mother was not satisfied and went elsewhere.

Figs. 4 and 5. G. W., aged 30 months. Restlessness, cries a great deal after eating, pendulous abdomen, night sweats with definite dullness over the thymic region. X-ray examination shows definite enlargement of the thymus more marked on the right side. Patient was treated August 29 and October 7, 1929, the last cut having been made at the time of the last treatment. The child was very much improved in every way and the follow-up film shows marked improvement in the size of the thymus shadow.

Figs. 6 and 7. P. S., aged 5 years. This child was suffering with enlarged tonsils and adenoids and was referred on account of some increased

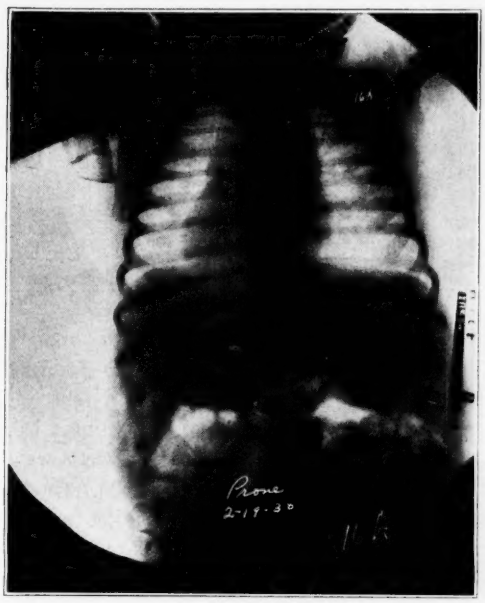

Fig. 9

dullness in the region of the thymus. Treatment were given on May 13, June 5 and June 26, 1929, and follow-up films made on July 17, 1929. The thymic dullness had largely disappeared and the x-ray study shows definite im-

provement in the size of the thymus. This child was well nourished and of the extreme blond type. It is possible that had preoperative investigation not been made and had the condition of the thymus not been discovered before the tonsillectomy serious consequences might have arisen. As it was she went through her operation without trouble and is now a perfectly healthy child.

Figs. 8, 9 and 10. J. R., aged 6 months. Referred on October 15, 1929, with dyspnea and crowing when she cried with dullness in the thy-

Fig. 10

mus region on both sides. Otherwise a normal, healthy, beautiful youngster that might well have received a high rating at the ordinary baby show. She received treatments on October 20, November 11 and November 25, 1929. On December 11, 1929, there was definite improvement in the clinical findings, but x-ray examination showed no change in the thymus shadow. She received treatments on December 20, 1929, and January 31, 1930, and film made on February 19 as illustrated in cut 9 shows decided decrease in the size of the shadow and all symptoms had disappeared. On May 7 film was made as illustrated in cut 10 which shows the very marked difference since the examination of October 15, 1929. The child is apparently healthy in every way.

Conclusions: There are many theories as to the function of the thymus, but none of them have been proven and no one knows just what it is.

We do know that an enlarged thymus is often present in cases of indefinite and obscure symptoms and that an enlarged thymus gives rise to certain definite physical findings.

X-ray therapy in small doses is almost specific in most cases and in those in which little change can be demonstrated roentgenologically, very marked improvement is shown clinically.

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DISCUSSION

Dr. Maurice L. Blatt, Chicago: Probably no greater catastrophe can happen in a family than the sudden death of a well-developed, well-nourished, apparently normal child, a child that has been the pride of the group. Yet, exactly this thing does happen almost monthly in Chicago, and it happens in cases in which there is a symptomless thymus.

It is the symptomless thymus that one should mention. In these cases there is no accompaying asthma, pyloric spasm, no constipation; there is no eczema nor is there thymic stridor to draw one's attention to the gland. It is sudden death in this type of case which comes for minor operative interferences to which I should like to call your attention.

My first examination of a child is percussing the chest. Dr. J. Greengard, who is associated with me, goes over the chest of every new infant that comes into our office, and we frequently find a dullness to the right or both sides of the sternum. Dr. Stoerk of Vienna called our attention to the incidence of the enlarged thymus in suicidal cases. Schwartz, who was Hochsinger's assistant, first showed me the enlarged thymus under the fluoroscope. Hochsinger, I believe, was the first of the group to try radiologic therapy in cases of thymus, and Warthin credits him with having reported the first successful x-ray treatment of enlarged thymus. Prior to the time of Hochsinger,

Chevalier Jackson had done a long tube intubation on one or two of these cases showing symptoms and about the same time considerable operative interference had been attempted.

Charles Parker of Chicago had developed a technic for the removal of thymus in infancy that had stood the test of several operations and a number of other individuals in Boston and Philadelphia, particularly, had removed the thymus in infancy. The work, however, was very unsatisfactory.

As Dr. Gilmore said, the physiology of the thymus is unknown. But in many ways the physiology of all the other endocrines is comparatively unknown and our conclusions are drawn from the absence or disease of those glands. Our conclusions, for instance, in diabetes are drawn because of the disease of the bodies of Langerhans. It is not accepted by all scientists, and there is a dispute as to the etiology of the thyrotoxic process.

So with the thymus we do not know its physiology but we do know that x-ray therapy, radiation over the thymic region protected in the manner which Dr. Gilmore has described, reduces the size of the thymus. Whether the changes in the blood and the changes in the individual are secondary to that radiation, or whether radiation applied elsewhere in the body might not have similar effects, we are not prepared to say. There are men who radiate the pylorus for vomiting associated with the enlarged thymus, and claim satisfactory results.

There is a distinct relationship between the unstriated muscle and the thymus. The bronchial asthma is a spasm of unstriated muscle and constipation is a spasm of unstriated muscle which can be controlled by thymic radiation. This experience is not mine alone, but Dr. Aldrich, to whose paper Dr. Gilmore has referred, reported a large number of cases of his own in which identical results were obtained.

My plea in this discussion is a plea to you as radiologists to influence the physician in your community to have his new-born infants examined for thymic enlargement before they leave the hospital, to use x-ray therapy in those instances where the thymus is apparently pathologically large. X-ray and reduce the size of the child's thymus before doing any surgery that is not of the emergency type.

The relationship between status lymphaticus and enlarged thymus is close. The first case of death from status lymphaticus was in Professor Langerhans' own child in whom during a minor operation death ensued. In our cases we have seen many instances in which tonsillar tissue is distinctly decreased in size after radiation over the thymus, and we believe that it is part of the picture of a decrease in the general lypmhatic enlargement which comes with treatment of status lymphaticus and which we cannot explain. There is an opinion that our radiation over the thymus affects the hormones of the parathyroids. We certainly are in no position to prove differently. We can only say that so far as we know we are protecting the parathyroids. If the radiation over the thymus produces systemic results, then it is possible there is a parathyroid stimulation and a loss of this spasm characteristic of the enlarged thymus.

I have had two cases in which something unusual occurred. One of those Dr. Blaine may still remember. A doctor's child who had had a number of treatments was not progressing properly. He went to Blaine, who gave him a treatment and generalized petechiae resulted. He then left Chicago and went to Iowa City. When he was filmed three weeks later the thymus had entirely disappeared.

Another was a case I saw at Michael Reese Hospital in which a new-born infant had a very large thymus with thymic asthma. We gave the child a single treatment. Later the child developed a Herxheimer reaction and was seriously ill. Adrenalin was given and the child recovered, but it died several months later. Postmortem showed a sarcoma of the thymus.

I want to call your attention to one other symptom that we think is of importance. That is a tendency to exophthalmos in many of these infants with enlarged thymus. It seems to disappear after treatment. As you know, many of the endocrinologists believe there is a relationship between status lymphaticus and toxic goiter of adult life.

Dr. Isaac Gerber, Providence, R. I.: I was very much interested in this paper. There is no point in repeating anything that has been said, but I might emphasize one or two aspects which have not been touched on particularly.

One is the matter of treatment of infants with symptoms but no visible thymic enlargement. That is the situation I run into quite frequently. I am consulted many times in connection with the babies who are born at our large Lying-in-Hospital and hardly a week passes that I do not see a child with symptoms of thymic disease where it is necessary to make a differential diagnosis between intracranial injury and thymic pressure. It is not easy going over all that with the pediatricians many times and when they get all through, even with lumbar punctures, all too frequently they are not able to make a positive diagnosis of intracranial hemorrhage or thymic disease. We take x-ray films, or perhaps we have an opportunity to fluoroscope the child as well, and we do not see anything at all; that is, we see no enlargement of the supracardiac shadow.

Now the problem comes up, are we to give that child radiation or not? It has worked out pretty well that if symptoms under any circumstances could be attributable to thymic pressure it is desirable to administer some radiation regardless. With intracranial hemorrhage the mild amount of radiation that is administered to the thymic region is not going to do harm. If by chance there happens to be some remnant of thymus that is pressing and does not happen to show

itself in the routine x-ray you are going to improve that.

The satisfactory aspect of all this work has been in the number of cases we have seen improved, and the improvement will come within twenty-four hours, especially when radium is used. In very acute cases I prefer the use of radium rather than x-ray because it seems to be more prompt. But if we at least relieve the thymic element we are doing our duty.

So it has become more or less a general principle in this type to treat not a visible thymus but treat a patient who has symptoms. If the symptoms are significant we feel the treatment should be given.

Dr. I. S. Trostler, Chicago: Dr. Gilmore's paper is an exceedingly good one and should be read by every general practitioner. Most pediatricians and all radiologists know about the thymus, but the general men do not.

We should always be on the lookout for enlarged thymus in infants particularly in those born prematurely and those apparently poorly nourished. Heavy breathing, crowing inspiration, failure to thrive when apparently on good nourishment, etc., should immediately suggest to the physician in charge that an enlarged thymus is present.

Slight enlargements frequently produce marked symptoms. This is probably due to the elasticity of the infant's thorax and the possibility of marked engorgement occurring in the thymus, with the consequent increase in intrathoracic pressure. The thymus enlarges greatly when the baby cries, so when making roentegenograms crying should be encouraged rather than stopped, as is usual in practically every other roentgen procedure.

The importance of the enlargement of the thymus during crying should not be lost sight of, because if the films are made with the thorax in repose, slight enlargements may be overlooked, whereas, these would be much more likely to show if the child were crying. The roentgenogram is the only absolutely reliable finding to which a positive diagnosis may be hung in enlarged thymus.

A. C. Singleton, in the Canadian Medical Association Journal of January, 1930, No. 22, page 23, said that in a series of ninety-five apparently normal newborn infants *thirty-five per cent. showed enlarged thymic shadows* on x-ray films. The size fixed for the normal child has a maximum width of 3.5 cm. Donaldson and Barnes, in the Journal of the Michigan State Medical Society for January, 1930, regard sixty per cent. of thoracic breadth at level of root of second rib as abnormal. This is a very good method of classification, but often *small thymi cause marked symptoms.*

In adults, various and numerous symptoms may be present. Stridor is not so often found in adults as it is in small children, but may occur in the presence of slight colds, bronchitis, and the like. A tendency to croupy attacks, bronchitis and a more or less brassy cough are frequently found to accompany a large thymus in adolescents and young adults, as well as older ones. Certain skin findings always prompt me to study the thymus. This is particularly true of psoriasis, and I have lately made it a rule to always treat the thymus in every case of psoriasis under my care.

I have had forty-seven cases of enlarged thymus in adults to treat with roentgenotherapy, and in every one relief has resulted. Many of these had asthmatic symptoms, while some had various other findings. Three of these came to me with a diagnosis of aortic aneurysm from roentgenograms made by physicians who were not radiologists and who misinterpreted the shadows. Two of these were alleged to have been confirmed by fluoroscopic findings of expansive pulsation.

I find that adults require considerably more radiation than do children and infants to produce effect upon the thymus.

Dr. Gilmore asked me to show some of my cases in adults.

(Slide 1, B. M., age 39.) A thick set asthmatic and psoriatic, with a large thymus. Treatment of thymus gave marked relief from asthma. Psoriasis also relieved, but he stopped treatment after asthma was relieved.

(Slide 2, F. D. S., age 45.) A robust, thick set man, who complained of asthma in damp weather only. Treated in 1925, and after a year in Chicago without an asthmatic attack, left for Africa where he stayed in the deep part where rubber is produced without recurrence of asthma.

(Slide 3, Dr. S. B. S., physician.) Thick set and apparently vigorous, but has asthmatic attacks. Three treatments in 1925 cured his asthma.

(Slide 4, Dr. C. S., physician.) Examined for heart as he had been told that he had an aneurysm of arch of aorta by another radiologist. Had no symptoms.

(Slide 5, P. M., age 25.) A tall, slim baker with Basedow's disease, pulse 140, exophthalmos, tremor, goiter. Basal metabolism plus 60. Treated in 1923 and in four months was minus 5 basal metabolism. No recurrence.

(Slide 6, M. K., age 40.) Basedow's disease with large thymus. Basal metabolism 39 plus. Treated in 1926 and after same had basal metabolism plus 10 and stays put.

(Slide 7, Mrs. H. S., age 35.) Toxic goiter with large thymus.

(Slide 8, Miss G. M.) Toxic adenoma with large thymus. Treated thymus and toxicity disappeared.

(Slide 9, Mrs. A. W., age 50.) Basedow's disease with large thymus. Gave one series of treatments in 1926, after which she deserted me and received x-ray treatment from a man who gave them to her for $5.00 each. She returned to me in 1928 with a basal metabolism of 70 plus, very slight goiter, no exophthalmos. Four real treatments to thymus region caused basal metabolism rate to lower to normal.

(Slide 10, R. A. S., age 31, dentist.) Basedow's disease. Had been operated on and had basal metabo-

lism of 59 plus, when he came to me in 1927. Now he is well.

(Slide 11, Mrs. C. K., 65.) Basedow's disease and large thymus. Very toxic. Treated mainly to thymus region in 1924 with good results. Still alive and well in January, 1930.

Dr. M. I. Kaplan, Chicago: I had an interesting experience with one case. We have been treating quite a number of cases for thymus, giving the same dosage to all patients. This case presented itself about two months ago, a child nine weeks old having all the symptoms of thymic enlargement. The usual exposure was given on a Saturday afternoon about two o'clock; that evening I was called and told that this child's symptoms had increased. A pediatrician was called in and he stated that the symptoms seemed exaggerated. The patient was sent to the hospital, where I saw the patient. By that time the dyspnea had decreased a bit, yet it did look like a Herxheimer reaction.

Upon examination we noticed quite a lot of edema around the neck, and in going over the chest we thought we found a condition that made us think of bronchial pneumonia. The child was kept at the hospital, watched carefully, x-ray exposures of the chest made daily, and at one time a definite shadow was found in the upper right lobe which was diagnosed as lobar pneumonia. The patient was treated accordingly. The coughing stopped on Sunday, about twenty-four hours after the treatment, and the patient was apparently getting along nicely. Then all of a sudden the patient took a turn for the worse and the x-rays that were taken showed there was some resolution of the pneumonia, but the picture looked more like a lung abscess and a diagnosis of the lung abscess was made after the case seemed to have cleared of pneumonia. Before the patient died a needle was inserted and a syringe full of pus was aspirated. The patient died about an hour later, or three weeks after the x-ray treatment.

The question that was put to me was whether the x-ray exposure had anything to do with the pneumonia, whether pneumonia had been brought on by the x-ray, or whether the patient was already infected. I tried to clear myself as best I could, and I could not see where the x-ray had anything to do with it.

By the way, the thymic enlargement had gradually subsided and finally was not visible on the film.

Dr. Wilbur H. Gilmore, Chicago (closing): I have very little more to add. The study of the thymus fluoroscopically is, of course, very valuable but it has the failing of all fluoroscopy, there is no permanent record.

I have never had any difficulty in getting the child to cry, in fact, that is the usual condition, but I can see no advantage in having them do this if they will remain quiet. In this investigation I think the condition should not be exaggerated.

The case recited by Dr. Kaplan I feel sure is a coincidence. There might have been some reaction from the x-ray therapy but in my opinion the x-ray had absolutely nothing to do with the untoward result.

SARCOMA OF THE BLADDER*
REPORT OF A CASE

LOUIS D. SMITH, B. S., M. D.

CHICAGO

The incidence of bladder sarcomata impresses one with their rarity, and especially so when one analyzes the literature, omitting the repetitions encountered in the collected cases and personal observations in bladder tumors.

Geraghty found but 2 in 180 cases of bladder tumors. Gardner found 7 in 369 cases operated on by various urologists and in 1702 collected cases of new growths of the bladder. Watson reports 52 in 653 collected cases and 2 in 134 of his own.

Munwes collected 107 cases reported from 1638 to 1913. One case of sarcoma was found in the series of 262 cases treated at the Mayo Clinic, as reported by Scholl. Caulk in 303 cases of bladder tumor found but 1. Albarran reported but 2 in 89 cases of bladder tumor. Steinmetz collected 13 sarcomata in 32 bladder tumors occurring in children. Poznanski in 1914 collected 115 cases. According to E. C. Smith, 4 to 5 per cent. of primary malignant tumors of the bladder are sarcomata. Stein estimated that 0.25 to 0.76 per cent. of primary tumors of the body occur in the bladder, and of malignant tumors 3.9 to 7.6 per cent. occur here.

Sarcomata are 4 times more frequent in the male, and occur mostly in the first and after the fourth decades.

Sarcomata of the bladder are extremely malignant. In the early stages they are small, single, sometimes pedunculated but usually sessile with broad bases. In 93 of the 115 cases collected by Poznanski 23 were pedunculated, 51 had broad bases and 19 were infiltrating. They are soft, friable, sometimes villous, but ulceration is rare, occurring in 7 of Poznanski's 115 collected cases. Infiltration and extension to neighboring organs are common. At times they are multiple and as such are considered by some as regional metastases instead of implantations or individual growths. The growth may be smooth in one place and villous in another. Normal mucosa may cap the growth, and the inva-

*Read before the Chicago Urological Society, Nov. 26, 1929.

sion of the mucosa gives it the villous appearance.

As to metastases opinions differ. Scholl says they are extremely frequent. In 46 autopsied cases collected by Munwes metastases were found in 50 per cent. Mixter says they do not metastasize. Albarran in 53 cases found only 7 with metastases. Concetti reports 1 with metastases in 42 cases in children. Ewing says metastases occur earlier than in epithelial tumors.

Sarcomata of the bladder may assume any type characteristic of its mesodermic origin: Angiosarcoma, myxosarcoma, myosarcoma, round

Fig. 1. Showing whole urinary tract—left kidney opened.

cell, spindle cell, lymphosarcoma, fibrosarcoma, osteochondrosarcoma, mixed tumors of meso and epithelial origin.

Lenormant reported an epitheliosarcoma of probable allantoic origin. It presented in parts a sarcoma with fusiform cells, and in parts epitheliolated or alveolar tubules and cylindric cells. It appeared in the neighborhood of the urachus in the superior pole. Gussenbauer and Billroth described a myo-sarco-carcinoma. Albarran described an adenosarcoma. These growths are certainly derived from allantoic remnants at the bladder dome. Some cases reported sarcomata undoubtedly were not. Fenwick's case of round cell sarcoma was found by Targett to be simply round cell infiltration in a fibropapilloma.

Cecil's analyses of location of sarcoma gives these figures:

Anterior bladder wall	42
Right lateral wall }	33
Left lateral wall }	
Base	51
Trigone	50
Vesical orifice	16
Ureteral orifice	2
Whole bladder	3
Urachus and upper bladder	1

In Cecil's case the trigone and vesical orifice were not involved. This is interesting in view of the statement of Caulk that sarcomata are localized entirely in the trigone. It is true that embryologically this should be so, for the trigone is mesodermal in origin, being derived from the lower end of the Wolffian Duct. The rest of the bladder is derived from the entodermal cloaca. Quoting Caulk, "the tumor is a defect in 'tissue-combination' between the mesoderm of the Wolffian Duct and entoderm of the primitive cloaca. . . . The allantois and urachus cannot give rise to a sarcomatous tumor of themselves, but the mesoderm of the body stalk which is continuous with the mesoderm of the umbilical cord, may give rise to a myxoma. The so-called cases of sarcoma of the urachus have been mixed tumors. . . . "

According to Albarran sarcomata arise more frequently in the anterior bladder wall than do epithelial tumors, and Ewing describes the commonest location at the junction of the trigone and bladder.

The symptoms are similar to those of the epithelial tumors. Hematuria, frequency of urination, pain and so on. There seems to be this difference, that after the onset the course is very rapid. According to Munwes, evidence of the duration of the growth is less than one year before a diagnosis is made. E. C. Smith's case developed symptoms only 10 weeks prior to consultation. In the case I am reporting, the first symptom developed only 3 weeks before the operation.

The course after operation is as a rule rapidly fatal. Quoting Munwes in 69 cases, 38 died soon after operation, and only 3 were considered cured, having been traced for 5 to 13 years. In Albarran's 26 collected cases, 13 died as a result of the operation and 10 had rapid recurrences. E. C. Smith's case died 3 days after operation and metastases were found in both kidneys. Gardner reported that 6 out of 7 cases in a series of 369 operated on by various urologists, died shortly after operation, the 7th living 4 years after. Watson found that in 35 operative cases 22 died at operation or immediately after.

The treatment of this highly malignant tumor is unsatisfactory. X-ray radiation and radium are of no avail. Electrocoagulation gives little hope even in the pedunculated type, as one cannot be certain of the extent of the involvement of the submucosal or muscular structures wherein the growth originates. Cecil's experience would tend to show that a liberal resection of the bladder wall in an early recognized case may offer some promise of cure, especially if we believe that metastases is slow and infrequent.

The case I have to offer is no different than other cases already presented. In its course and end it is typical of the nature of the tumor. Had I recognized the nature of the growth, I should have certainly done a partial cystectomy. It is true, that on opening the bladder, the case aroused doubt in my mind that it was an epithelial tumor, but its pedunculated structure prompted me to resort to simple electrocoagulation.

A. B., age 48, tinner by occupation. Referred by Dr. Mead. Entered hospital October 11, 1928, with the following complaints:

1. Hematuria, duration 3 weeks.
2. Dysuria, duration 1 week.
3. Nocturia, duration 3 weeks.
4. Pain over both kidney regions, duration 3 weeks.
5. Diminished force of urinary stream.
6. Loss of weight 10 pounds in five weeks.

Onset and Course: Patient was perfectly well until about three weeks before entrance, when he began having pain and burning on urination, at first not severe. During the first week he noticed that the urine was very bloody and also that there was a diminuation in the strength of the urinary stream.

For the past three weeks the patient has had to get up at night two or three times, and the act of urination was very painful. Had mild ache in the region of both kidneys for the first few days of his illness.

Past History: Medical, surgical and venereal negative.

Family History: Father and mother died of old age. Two brothers and one sister living and well. No history of tuberculosis, cancer or heart trouble.

Respiratory, circulatory and gastro-intestinal systems —no complaints.

Physical examination reveals a well nourished white male about 45 years of age, who does not appear sick.

Head, negative. Neck, no palpable glands. Lungs, heart, abdomen and genitalia negative. Reflexes normal.

Cystoscopy October 11, 1928, revealed a very large growth, whose base could not be outlined, attached to the fundus of the bladder. On the right lower border of this growth a freshly bleeding spot was seen. The top of the growth appeared like the head of a toadstool.

A blood examination October 11, 1928, showed reds 4,001,000, hemoglobin 85%, leucocytes 14,200, neutrophiles 72%, small lymphocytes 21%, eosinophiles 1%. The Wassermann was negative.

Cystotomy, October 12, 1928.

On opening the bladder a growth the size of a large mushroom was seen. The surface or head of the growth was very friable and showed an area of necrosis about 2 cm. in diameter. The growth was pedunculated, the pedicle being one and one-half centimeters in length

Fig. 2. High power—typical spindle cell sarcoma.

and about one and one-half centimeters in diameter. The growth was situated on the left lateral wall of the fundus and did not involve the serosa of the bladder. The growth was removed by electro-coagulation.

Postoperative Course: Normal until October 20th, when a peculiar granulation appeared in the wound. October 26th a bloody drainage appeared. Temperature normal. October 28th pain felt in incision; profuse bloody urine through wound. October 30th severe pain in bladder and urgency present. November 2nd, blood in urine subsiding. November 4, temp. 100.4, pulse 120. Resp. 24. November 5th violent hemor-

rhage from bladder. Pain severe, temp. 99.6. November 6th, urinated a little for first time, and this was bloody; moans with pain. Biopsy from wound and bladder diagnosed as sarcoma. X-ray of chest was negative. Highest temp. from 6th to 11th was 100.4. November 12th fresh hemorrhage. November 14th temp. 101.2. Pain so severe as to require morphine. November 16th, temp. 102; agonizing pain in penis and bladder. Pain almost constant. November 21st involuntaries, axillary temp. 99.8. November 22nd temp. rose to 101.8, pulse 100. resp. 18. Lapses into semi-comatose states of short duration. November 23rd axillary temp. 103.2, pulse 140. Cheeks sunken with a flush. Condition looks serious. November 24th comatose most of day, temp. mounting rapidly to 105.6 rectally; pulse perceptible. Died at 5 P. M.

Autopsy performed by Professor E. R. Long of the University of Chicago.

Gross: Sarcoma of the urinary bladder with extensive infiltration of the bladder wall and prevesical tissue and partial obstruction of the prostatic urethra. Recent supra-pubic cystotomy. Tumor extension in the adhesions at the site of the operation. Tumor metastases in the hypogastric and lower periaortic lymph nodes. Free tumor and blood clot in the urinary bladder. Bilateral uretero-pyelitis and early right pyelonephritis. Acute splenic swelling. Parenchymatous degeneration of the kidneys. Parenchymatous and fatty degeneration and focal necrosis of the liver. Fibrous scar in the apex of the upper lobe of the left lung with apical fibrous adhesive pleuritis. Calcification of one right peribronchial lymph node. Pyorrhea alveolaris.

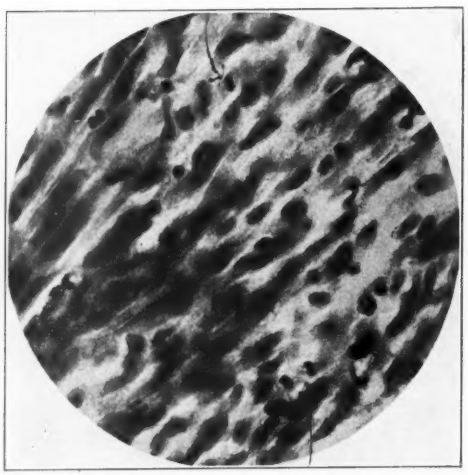

Fig. 3. High power—arrows indicate mitoses.

External Appearance: The body is that of a tall well-developed man of about 50 years of age, brown hair turning slightly gray. There is no icterus. No discharge from the ears, nose and mouth. There is a good deal of pyorrhea about the mouth. The cervical, supra-clavicular, and axillary lymph nodes are not enlarged. The external genitalia are normal. There is no edema. There is a draining supra-pubic cystotomy wound, the upper portion of which is healed and for a distance of 6 cm. in the lower part of this wound there are masses of tumor and granulation tissue.

Abdominal Cavity: There is about 1½ cm. of fat in the midline. Peritoneal surfaces are smooth and shining and show a noticeable dryness. The appendix is normal and bound down by fibrous adhesions. The mesenteric lymph nodes are not enlarged but the retroperitoneal lymph nodes are enlarged.

There is a mass with adhesions in the pelvis. The liver is at the costal margin and the gall bladder is free. The spleen is free.

Pleural Cavity: Costal cartilages are not calcified. There are easily torn fibrous adhesions at the left apex. The left pleural cavity is free from fluid. The right pleural cavity is free from adhesions and fluid.

Pericardial Cavity: Pericardial cavity contains a normal amount of clear straw colored fluid. The pericardial surfaces are smooth and shining. The heart is distended and is stopped in systole.

Mouth and Pharynx: The mouth shows some pyorrhea alveolaris, otherwise normal. The pharynx is normal.

Larynx and Trachea: The trachea and left main bronchi are normal. The right, however, contain a bloody fluid.

Esophagus: The esophagus shows no changes.

Heart, Aorta and Vessels: The heart has stopped in systole and is slightly enlarged, the right side being distended. The tricuspid, the mitral, pulmonary and aortic orifices are normal. There is no sclerosis of the coronary arteries. The myocardium of the left heart is normal, measuring 12 mm. Aorta shows a little thickening around the mouths of the intercostal and abdominal branches, but otherwise no changes.

Lungs: The lungs collapse well. There is a puckered scar overlying a fibrous scar in the upper lobe of the right lung. The cut surface of the right lung shows nothing abnormal, there being no edema or consolidation. The left lung is similar to the right and shows no gross abnormalities.

Peribronchial Lymph Nodes: The left peribronchial lymph node is calcified. The others are normal, showing no tumor metastases.

Liver: The liver is increased in size, estimated weight being 2100 grams. It is soft. The cut surface shows periphery of the lobules rather pale and the central portions can be easily seen. The lobular markings are well preserved. At the junction of the two lobes there are some slight areas in which the lobular markings are preserved but the tissue resembles tumor tissue, and these areas are firmer than the liver tissue. Sections of liver sink readily in water. These areas are wedge-shaped. The gall bladder contains a dark thick bile. The bile passages appear to be normal.

Spleen: The spleen is large, weighing about 300 grams, and is very soft. The cut surface is of a pale

brownish purple. The Malpighian corpuscles can be seen.

Pancreas: Shows no gross abnormalities.

Gastro-Intestinal Tract: The mucosa of the stomach shows no changes except the rugae, which are prominent. The pylorus shows no changes; the duodenum is normal.

Adrenals: The adrenals are rich in lipoid.

Kidneys: The left kidney is surrounded by a considerable amount of peri-renal fat and is enlarged and soft. The left kidney is otherwise normal. The lobular markings are well preserved. The cortical markings are well preserved. The cut surfaces bulge. The pelvis is injected and the mucosa is smaller. Small granules project from the surface. The right kidney resembles the left. The pelvis is somewhat distended. This kidney is more swollen than the left. The cortical markings are to a considerable extent obliterated and occasional streaks are found in the cortex. The capsule strips easily, leaving a smooth surface. In this case the pelvis is more injected.

Urinary Tract: Both ureters are much dilated. This dilatation is very marked in the lower third of both ureters. The perivesical tissue is much infiltrated. There is a large mass of necrotic tumor tissue lying free in the lumen of the bladder and numerous similar

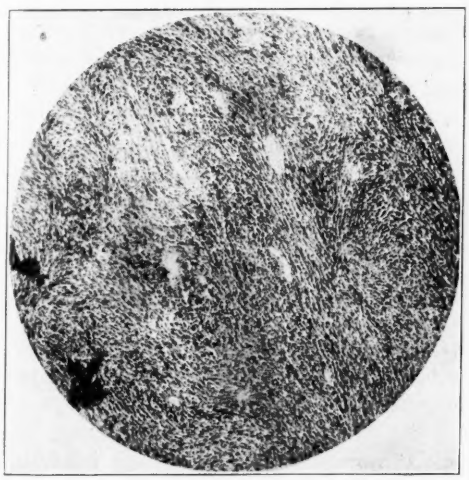

Fig. 4. Low power—showing typical spindle cell sarcoma.

partially necrotic masses arising from various sides of the wall. The main mass is in the lower posterior part, and projects into the lumen in polypoid fashion. The surface is smooth, although partially necrotic and gangrenous. The contents of the bladder are foul smelling. The substance of the tumor and its extensions is soft and friable and yellowish white. The anterior wall of the bladder is extensively infiltrated, and tumor tissue extends through the adhesions at the site of the old operation so as to appear in soft round masses above the cystotomy wound. There is a projecting mass, papillary in structure 2x2x1 cm. obstructing the orifice of the prostatic urethra. There is much superficial necrosis of the bladder wall and the prevesical tissue is infiltrated in various places. The mass within the center seems to be tumor cells in a blood clot.

Generative Organs: The prostatic urethra is normal below the mass mentioned. The testes show no significant changes.

Lymph Nodes in General: The hypogastric and lower periaortic lymph nodes are enlarged and the normal tissue largely replaced by tumor tissue. The inguinal lymph nodes are hyperplastic. There are no significant changes in the lymph nodes elsewhere.

Brain and Meninges: The brain and meninges were not examined.

Spinal Cord: The spinal cord was not examined.

Muscular System: Well developed.

Skeleton: The skeleton is normal.

Histology: The tumor is composed of a solid mass of large spindle cells with a moderate amount of cytoplasm, although vessels are not numerous. There is no necrosis. Mallory's stain shows delicate collagenous fibers between the tumor cells.

Kidney: Much protein and occasional casts in the tubules, otherwise no marked changes in the left kidney. Slight diffuse fatty degeneration of the epithelium.

Testicle: Shows occasional small scars and absence of spermatogenesis.

Liver: There are numerous small sharply defined areas of necrosis of the liver cells completely replaced by polymorphs without evidence of suppuration. No other changes and no tumor cells are found. Moderate diffuse fatty degeneration shown by Scharlach R.

Spleen: No marked changes.

Adrenal: Abundance of lipoid material. No abnormalities.

Myocardium: Shows an occasional fibrous scar. No other changes.

Lung: Shows atrophic emphysema and moderate anthracosis. No other changes. No tumor tissue.

25 E. Washington.

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OPERATIVE MEASURES IN THE TREATMENT OF LOW-BACK PAIN*

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Undoubtedly there exists a large class who complain of low-back pain and who are rendered partially or totally disabled by affections of the lumbosacral region, regardless of the persistent employment of conservative measures, as apparatus, eradication of foci, etc. This type of patient is a serious industrial problem, for which a solution has been attempted in well selected cases by operative procedures, the object of which is to unite by osseous fusion certain affected joints.

No attempt will be made to enumerate all the well known operative measures, but only those employed by me in thirty-six cases, in which a survey has been made as a basis of this discussion. The technic of an extra-articular procedure for inducing osseous fusion of the sacro-iliac joint, and also the lumbosacral articulation, was reported in *Surgery, Gynecology, and Obstetrics,* August, 1927, and will again be described in detail.

In so short a time it would not be possible to engage in a full discussion of this complicated subject, but sufficient time will be spent to consider the various common entities from which symptoms in this region may arise. These may be enumerated as follows:

1. Infection.
2. Trauma.
3. Congenital anomalies.
4. Postural defects.
5. Intestinal stasis.
6. Anomalies of the pelvic organs.
7. Intraspinal lesions.

A careful physical examination is first made to determine, if possible, the exact location and the nature of the pathology, after which symptoms relative to intestinal stasis, anomalies of the pelvic organs, and intraspinal lesions must be excluded, or when associated, must be relieved before surgical measures on the spine are considered. If these are excluded, there remain only four of the above enumerated factors in which surgical measures are indicated: 1, Infection; 2, Trauma; 3, Congenital Anomalies, 4, Postural Defects.

Careful differentiations must be made between lesions of the lumbosacral region and the sacro-iliac joints, but as these articulations are so closely associated anatomically, any severe injury or infection may involve the three joints and render differentiation as to the exact location of the abnormality or pathology difficult, and at times impossible.

Infection, in my opinion, is the chief etiological factor causing symptoms referred to the lumbosacral and sacro-iliac regions. Trauma is often the instigating factor, but unless very severe and of a most definite nature, is of secondary importance. Even when severe trauma is the causative agent, the possibility of an associated infection from some distant focus must be considered. This is of especial importance in those past 35 years of age.

Actual sacro-iliac relaxation or separation is of great rarity, though it is much discussed, and frequently diagnosed. I have had the privilege of examining many thousands of backs, normal and abnormal, and have never been able to elicit the slightest evidence of sacro-iliac relaxation or separation. The only cases of separation that I have seen were those in which there was gross displacement apparent in the roentgenogram, following such injuries as being caught between two box cars, falling from a horse, or being run over by an automobile. I personally doubt whether sacro-iliac separation or relaxation, as a clinical entity, really exists, except in severe injuries and rarely for a short period in women during pregnancy. Undoubtedly, in the past, erroneous diagnosis of sacro-iliac relaxation has been due to the roentgenograms having been made at varying angles, so that one joint often appeared wider than the one on the opposite side.

Congenital anomalies, as enlarged transverse processes, flat articular facets, wedging of the vertebra, absence of a vertebra, and numerical variations can only be considered as potential weaknesses, and when present can not be accepted unequivocally until other causative agents have been excluded.

Static or postural causes of pain in the lumbosacral and sacro-iliac joints are not uncommon, but are usually associated with general postural

*Read at meeting of the Chicago Society of Industrial Medicine and Surgery, October 2, 1929.

defects, as flat feet, and like congenital anomalies, may be considered as largely potential.

Like the upper quadrant of the abdomen, the lumbosacral and sacro-iliac joints in the spine may be said to be the region of doubt. With a careful routine examination the exact location of a lesion of this region may be determined in a large percentage of cases; however, this can only be proven by being able to relieve the symptoms and to restore the patient to normal by efficient treatment. At present we can only state to the patient that there are three joints to be considered—the lumbosacral and the two sacro-iliac, and until all three are efficiently treated relief is not certain, as a vicious cycle may exist. Nevertheless, the chances are that treatment to the joint, which is apparently affected, gives complete relief in a great majority of patients.

Even with the advent of the Bucky-Potter diaphragm it is impossible to determine in every case, with accuracy, the pathological or anomalous process in this region by the roentgenogram. There are so many normal variations in appearance that much experience is required to recognize any except gross abnormalities.

In infections, months or years may elapse before there is any change in the continuity or structure of the bones; consequently, the diagnosis must be frequently made before such changes occur, if relief is to be secured. After trauma, gross fractures of the sacrum, pelvis and lower spine may be apparent. Forward displacement of the fifth lumbar vertebra upon the sacrum, spondylolisthesis, may be demonstrable, but this may also be due to trophic changes or infection.

In a large percentage of traumatic injuries to this region, as with infections, the roentgenogram will not demonstrate any abnormality; therefore, after definite trauma, conclusions must often be reached by physical examination alone.

The conservative measures give relief to many of those suffering with the symptom complex known as low-back pain, but there is a great percentage who are largely incapacitated who suffer from a weak and painful spine, regardless of the treatment employed. It is in this class that operative measures are considered. However, only until recently have surgical procedures been employed routinely, except in those who were manifestly tuberculous.

The object of these operative procedures is to obliterate or fuse together by bone the affected joints. In other words, supplying a more natural, a more efficient and a permanent internal brace.

Before entering into a discussion of operative measures, it must be stated that relief should be secured, when possible, by conservative measures. Search for and removal of all definite foci of infection is necessary, regardless of the cause, but relief thereby can rarely be expected, except shortly after the onset.

The indications for operative treatment are as follows:

1. In those in whom a definite pathological process or anomaly is demonstrable by the roentgenogram, as tuberculosis, fractures, etc.

2. In those in whom severe symptoms have persisted over a period of years in spite of the best conservative measures, even though the roentgenogram of the regions has been persistently negative.

Unfortunately, there is no surgical procedure by which both sacro-iliac joints and the lumbosacral spine may be safely and efficiently fused, at one operation. However, the lumbosacral and one sacro-iliac joint may be fused at the same time when doubt exists as to the site of the lesion, and usually has been found to be sufficient. The lumbosacral spine and the sacro-iliac joint, in which symptoms are apparent, are selected. Of course, in those in whom the pathology can be definitely located only the affected joint is submitted to surgery.

Operative measures for inducing osseous fusion of the sacro-iliac joint will be first considered. All well known procedures for this purpose induce fusion by exposing the joint and denuding the articular surfaces. I have devised a method, previously mentioned, which has the advantage of being entirely extra-articular, and avoiding the danger of instigating an acute exacerbation or secondary infection, with well known disastrous results. Especially is this danger encountered where the process is tuberculous.

In the skeleton, the dorsum of the ilium will be seen to extend over the posterior aspect of the sacrum, forming a gutter or triangular space with the sacrum. The object of this procedure is to fuse or induce osseous union between this overhanging portion of the ilium and the posterior surface of the sacrum, and this to cause

extra-articular ankylosis posterior to the joint. The technique is as follows:

An incision is made along the outer lip of the crest of the ilium from the posterior one-third or one-half of the posterior inferior spinous process. This is carried down to the bone, where the periosteum is incised and elevated for a considerable distance, and the posterior portion of the dorsum of the ilium exposed. The crest of the ilium is dissected free to raw bone and the adjacent fibrous tissue removed from the posterior surface of the sacrum beneath the region of the erector spina, or sacrospinal muscle. A portion of the crest is removed and placed in a towel. The inner surface of the overhanging portion of the crest of the ilium is denuded, and a raw gutter made parallel with the sacro-iliac joint, formed by the posterior surface of the sacrum and the inner surface of the ilium posterior to the sacro-iliac joint. Into this space is placed the graft from the crest. Multiple grafts or "shavings" are next secured from the dorsum of the ilium and placed into the gutter until the space is well filled, when the wound is closed in layers. The patient is placed on a Bradford frame for a period of six weeks, when a low back brace with sacro-iliac belt is applied.

In those in whom fusion of the lumbosacral spine is required, in addition to fusion of the sacro-iliac joint, a curved or convex graft may be secured from the crest of the ilium, and transplanted into the spinous process of the lumbosacral region after the manner of Albee.

The lumbosacral regional one may be best fused by the Albee graft where the spinous processes are in the same plane, but unfortunately, there is considerable lordosis in most individuals. Therefore, it is often necessary to break down the spinous processes, denude the *laminae* and then transplant an osteo-periosteal graft which conforms accurately to the lumbosacral region, and which is a combination of the principles evolved by Albee and Hibbs.

Osteo-periosteal Graft. The technic of securing the osteo-periosteal graft is as follows:

A curved or straight incision may be used, exposing the inner flattened surface of the tibia. The skin is reflected, leaving the periosteum attached with as much over-lying tissue as possible. The periosteum is incised, outlining a rectagular area slightly larger than the dimensions of the graft desired, leaving a margin of about one-eighth inch of soft tissue surrounding the graft. The outline of the graft is then defined on the surface of the bone by shallow incisions with a chisel directed at right angles to the bone. The graft is then raised by elevating a series of particles of bone from the cortex of the bone with a chisel, care being taken not to separate the particles from the periosteum. As the graft is chiseled free it curls upon itself like a shaving of wood, and when free, must be straightened out before it can be transplanted. The periosteum with its attached bone fragments supplies a graft rich in osteogenic properties, which is readily accommodated to the size and shape of any graft bed.

A survey was made of thirty-six cases, in whom one or more of the joints in question had been operated upon for the purpose of fusion. No definite conclusion can be reached, as this report is only preliminary. In the etiology, ten were tuberculous; in four trauma could be ascribed as the sole cause of symptoms; one was due to postural defect; one to congenital anomaly; nineteen to infectious arthritis and one to osteo-arthritis, making a total of twenty-six that were non-tuberculous.

An estimate of the results can be demonstrated in the non-tuberculous by the following table: fifteen were relieved; three were improved; no improvement in two; too early to estimate results in four; and two died.

In the tuberculous cases, six were apparently arrested and in four conclusions have not been reached.

In seven, the extra-articular fusion of the sacro-iliac joint, with transplanting of the crest of the ilium into the spinous process of the lumbosacral region was employed. Two of these died of operative shock, but were not the best surgical risks; therefore, it is believed that this procedure is not advisable, except in robust individuals. In fusing the sacro-iliac joint alone by this method, there has been no operative shock and no mortality; also when the osteo-periosteal graft was placed into the lumbosacral spine and the sacro-iliac joint was fused by extra-articular method, there has been no operative shock or mortality. Of the thirty-six cases there were only five in whom no definite abnormality could be demonstrated by the roentgenogram. In

these, symptoms had persisted for years, and conservative measures had been employed. The results have apparently been satisfactory. Of the nineteen with some type of infectious arthritis only eight gave a definite history of trauma, the relation of which to the cause was doubtful.

After the elapse of more time, the tabulated results of these procedures in the sacro-iliac joint alone, and in the lumbo-sacral and sacro-iliac joints in conjunction, will be of more value, but at present the relief so far obtained has been sufficiently encouraging to advise the procedure in all well selected cases.

PROPHYLACTIC CARE IN INFANCY*

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Preventive medicine has come to occupy an increasingly important place in therapy. This is true of all branches of practice, but is most particularly true of pediatrics. Medical care during infancy consists to a considerable extent in the care of the well baby, and in pediatrics prophylaxis has gone a step further than in other branches of medicine. Preventive pediatrics consists not only in the prevention of disease, but also attempts to eliminate structural defects of the organism. In other words an effort is made to achieve as nearly perfect an individual as possible, not only from a physical point of view, but from the standpoint of mentality, character, and emotional balance. We shall consider briefly some of the factors entering into this branch of practice, concerning ourselves only with the normal infant.

Infant Mortality. The progress made by any branch of preventive medicine is gauged by the statistical evidence accumulated relative to the mortality rate during a period of years. In childhood, it is during the first year of life that the death rate is the highest, the mortality diminishing progressively as the child approaches puberty. Infant mortality has always been considered an important index of the general health, sanitation, and economic situation of a community. During the past thirty years there has been a steady diminution of infant mortality in the United States, ranging from about 150 deaths per 1,000 live births in the latter part of the nineteenth century to about 65 to 75 per 1,000 births at the present time.

Economic factors bear a distinct relationship to infant mortality. Overcrowded housing conditions, poverty, necessity for employment of the mother, all definitely increase infant mortality. Race plays a role in this relationship, colored races, due to their poor economic condition, showing a high mortality. The age of the mother is also an important factor, the rate being highest for very young mothers. Illegitimacy predisposes to a high infant death rate. Prenatal care is of tremendous importance in infant mortality, premature and congenitally weak infants showing a high rate.

An examination of the statistics relative to the actual causes of death reveals the facts that the greatest proportion of deaths occur during early infancy, up to the age of one month, and that gastro-intestinal disturbances account for a considerable number of these, about 27 per cent. If one compares mortality statistics over a period of years, one will note that the diminution in death rate has occurred in this group of cases. This fact bears a distinct relationship to the character of the feeding. Breast fed infants are represented in mortality figures to only a relatively small extent, about 75 per cent. of the deaths occurring in artificially fed infants. Ninety per cent. of the deaths from diarrheal disturbances occur in bottle fed babies. Prematurity, congenital debility, and birth injuries lead the list of causes, accounting for about 35 per cent. of the deaths. Respiratory diseases, particularly the pneumonias, show about 17 per cent., and other communicable diseases play a relatively small role.

Infant Feeding. From the foregoing, one may readily appreciate the importance of proper feeding in the normal infant, in connection with mortality. It has added importance in our striving toward the achievement of an ideal individual. The infant may not necessarily succumb, but as a result of improper feeding and nutritional disorders may bear physical defects throughout life.

Every discussion of infant feeding should begin with breast feeding. It is the ideal method of infant feeding, as well as the simplest. Breast

*Read before the Henderson County Medical Society, Biggsville, Illinois, November 6, 1929.

milk is the food best adapted for the nutrition of the infant, least likely to be contaminated with bacteria, and in addition has the property of conferring specific immunity to many of the infectious diseases. In spite of these facts there is an increasing tendency in recent years to stress the importance of artificial formulæ at the expense of maternal nursing. Part of the fault lies with the modern mother, who finds breast feeding confining and tiresome, and feels that, since pediatricians are accomplishing such wonderful things with artificial formulæ, her efforts are a useless waste. This attitude on the mother's part is directly traceable to misinformation as to the importance of breast feeding and should be combated by the physician. It is possible in almost every instance to supply breast feeding for at least the first few months of life, and since this is the most dangerous period for the infant, every effort should be bent to continue nursing.

As to the technic of breast feeding, little need be said. The nursings should be regular at three to four hour intervals, 15 to 20 minutes at a time, alternating the breasts. Every effort should be made to stimulate the secretion of milk by complete emptying of the breast and proper diet and hygiene of the mother. A serious effort should be made to give some breast milk for at least three months. It is not advisable to continue breast feeding for longer than nine months. The question of the addition of other foodstuffs during the period of breast feeding is of importance. Many pediatricians feel that it is wise to substitute one breast feeding with an artificial feeding at three months. This has several advantages. It permits the infant to develop a tolerance to cow's milk early, at a time when the greater part of the diet is still breast milk. This eliminates some of the severe upsets formerly seen at weaning. Furthermore, it gives the mother a little more liberty and will help prolong the total nursing period in many instances. Cereal feedings should also be instituted early, around the third or fourth month, and a vegetable feeding introduced at about the sixth month. This supplies some of the inorganic elements and food accessory substances which might otherwise be lacking in the regimen. In addition, it is valuable in producing proper dietary habits in the child.

Complemental Feeding. In some instances it will be found that the supply of breast milk is insufficient to maintain normal growth in the infant. When this occurs, it is necessary to make up for the deficiency in the milk by some type of artificial formula. It is advisable as a general rule to give the breast feeding first, complementing it later with the desired amount of formula. A simple method of determining the exact amount of breast milk the baby obtains is by weighing the baby before and after nursing over a period of twenty-four hours. It is often found that the breast milk increases after a period of insufficient supply, so that the complemental feeding may be cut down or entirely eliminated.

Supplemental feeding has already been mentioned. It consists in the replacement of an entire breast feeding by a bottle and is the method used in weaning the infant.

Artificial Feeding. In a certain proportion of cases where for some reason it is impossible to supply the baby with breast milk, artificial feeding is resorted to. As a general rule it is possible to feed almost every baby successfully on a mixture of whole fresh cow's milk modified by dilution and the addition of carbohydrates. There are certain fundamental differences between cow's milk and human milk. Cow's milk has a higher protein content, 3.5 per cent., as compared to 1.5 to 2.0 per cent. in the case of human milk. The fat content is approximately the same, about 4 per cent. The carbohydrate, however, is distinctly less in cow's milk, about 4.5 per cent., human milk running 6-7 per cent. An important difference in cow's and human milk is the character of the curd. Human milk yields a very soft, finely divided curd, while cow's milk gives a very tough, hard, lumpy curd. This difference is an important one in infant feeding. The bacterial content of cow's milk is always high, while human milk is practically always sterile.

In adapting cow's milk as a feeding for infants, therefore, the above differences must be considered. It is not essential to attempt to imitate breast milk very closely, as has been done in the case of some proprietary foods, but several alterations are made to render the milk digestible by the infant. It is essential that the character of the curd be changed. This is one of the prime

considerations in infant feeding. A feeding yielding a soft, finely divided curd in digestion will always be well tolerated by the infant, while one yielding a tough, lumpy curd will often be poorly handled. To modify the character of the curd, a number of measures have been employed. Perhaps the simplest of these is boiling the milk. This procedure has two-fold value, inasmuch as it sterilizes the milk as well as altering the character of the curd. Both of these factors are important, and one may state almost as a general rule that milk should be boiled throughout infancy. Other methods of altering the curd consist in the addition of sodium citrate, lime water, lactic or hydrochloric acid and the like.

Dilution of the milk is a less important factor. Infants tolerate highly concentrated mixtures well, provided steps have been taken to alter the nature of the curd. The amount of water added is dependent upon the total amount of feeding to be given in twenty-four hours. Addition of carbohydrates is necessary to supply the basic maintenance requirement for growth and development. This may be added in the form of ordinary cane sugar, dextro-maltose compounds, Karo syrups, or sometimes lactose.

In computing formulæ in infancy, several basic rules are conveniently used. In arriving at the total daily quantity needed, it is necessary to decide the number of feedings to be given in a day and the amount to be given at each feeding. Most men prefer to feed babies as infrequently as possible during the day, and in the case of normal infants it is usually possible to feed at a four-hour interval from the start. Occasionally, small babies will be fed at a three-hour interval for the first few weeks and then placed upon a four-hour schedule. The amount to be given at a feeding may conveniently be estimated by adding two ounces to the baby's age in months. Thus a three-month-old child as a rule will be satisfied with five ounces of feeding. This rule holds good up to the age of six months, when most babies will take eight ounces. This should be the maximum amount of milk given at a feeding and should not be further increased during the second half of the first year.

The amount of milk to be given in the day's formula may be computed by taking approximately one and one-half to two ounces of milk for each pound of body weight. For example, an infant weighing ten pounds would receive approximately fifteen to twenty ounces of milk in the day's feeding. This factor cannot be set as an absolute rule, since infant feeding is always an individual procedure, and one child may thrive on 1.5 ounces per pound of body weight, while another will require considerably more than that to maintain its growth. It furnishes a convenient basic rule to work from, however, and always yields a safe minimum of 1.5 to 2 grams of protein per pound of body weight.

Carboyhdrates must be added to bring the amount fed to meet the basic requirement of 4 to 6 grams per pound of weight per day. Each 1.5 ounces of cow's milk contains approximately two grams of lactose. If we add, therefore, 0.1 ounce or 3 grams of carbohydrate for each pound of body weight we will bring the total amount of carbohydrate in the feeding up to its required level.

A feeding of this type is poor in food accessory substances, and vitamines A, C, and D must be supplied by the addition of orange juice and cod liver oil. These are usually started some time between the first and second month.

Mixed feeding should be instituted around the fourth or fifth month by the addition of cereal. By the sixth month a vegetable feeding should be given, either in the form of pureed green vegetables or as a vegetable soup. The colored vegetables, such as spinach, carrots, peas, string beans and the like, should be stressed for their high mineral content.

Much interest has been displayed in recent years in various types of special feeding. As has been stated, most infants will do well on modified whole cow's milk feedings. In small, weak infants, in prematures, or in infants with pylorospasm, special formulæ are often of great value. Various acidified milk mixtures have enjoyed considerable popularity in such cases. Lactic acid milk, produced either by culture or chemically by the addition of lactic acid to whole milk, is one type of acid milk frequently used. Lemon juice, orange juice, hydrochloric acid, or vinegar have also been used to acidify the formula. These mixtures have two advantages. In the first place, the addition of the acid has the property of splitting the curd, giving a very soft, finely divided coagulum with rennin. In

addition, the increased acidity of the formula tends to reduce vomiting in pylorospasm by increasing the acidity of the gastric contents, thus facilitating opening of the pylorus. On account of these properties it is possible to feed a highly concentrated mixture with these acid milks without producing gastro-intestinal disturbances, thus giving small, weak infants a high caloric diet and producing rapid gain in weight.

Eiweiss milk or commercial powdered protein milk has a valued place in the armamentarium of the pediatrician, particularly in premature or small, weak infants, where breast milk is not obtainable or in the severe nutritional disorders.

The various powdered milks or unsweetened evaporated milk also fill an important place in infant feeding. These are most useful under circumstances where it is difficult to obtain fresh whole milk without contamination. Such conditions arise in remote communities or small towns without adequate refrigeration, or on long journeys. These milks, when properly prepared, give a whole milk which is free from bacterial contamination and has the added advantage of yielding a fine, soft curd, due to the heating of the milk in sterilization.

Prevention of Rickets. In the attempt to raise perfect individuals, the prophylactic treatment of rickets occupies an important role. Numerous defects result from rickets, and the tendency to the occurrence of upper respiratory tract infections in rachitic children increases the hazard as to life. In many instances one feels that the prevention of rickets should commence in the prenatal period.

In the production of rickets, a number of factors are concerned. The type of feeding, the presence or absence of sunlight, use of cod liver oil or other irradiated substances all play an important role. Prolonged breast feeding, without the addition of vegetables and cereals, or the feeding of low fat and high carbohydrate mixtures increase the incidence of rickets. The use of sunlight in regular dosages during the summer months and of ultraviolet light in the winter months when sunlight is not available will distinctly diminish the incidence of rickets. In addition, the use of foodstuffs or medication containing the specific antirachitic vitamin are of great value. Of these, cod liver oil has enjoyed the greatest popularity. It is rich in both vitamin D and A and, in addition, supplies definite food value in its fat content. Its disadvantage lies in the fact that at times it is not well tolerated and that some babies refuse to take it in adequate amounts. Of recent years it has been found that certain foodstuffs when exposed to ultraviolet light have the antirachitic property bestowed upon them. Of these, the most important, perhaps, is ergosterol, which when irradiated becomes an extremely potent antirachitic agent. This substance may be dissolved in an oil in such quantities that a very minute dose may be given and will confer protection against rickets. It must be remembered that only vitamine D is being supplied in this way. Irradiated ergosterol is now marketed by several firms under various trade names, Viosterol, Acterol, or Vigantol, and is being used both in the prophylactic and curative treatment of rickets. The dosage used in prophylaxis ranges from three to ten drops daily in the commercial preparations now marketed. Other foodstuffs, such as milk and various cereal grains, have also been irradiated. These seem to have definite value in the prophylaxis of rickets, but have the disadvantage of inaccuracy in dosage.

In spite of these measures, which are receiving increasing use of late, most well nourished infants show some degree of rickets, though the severe deformities and the nervous manifestations are seen less and less frequently of late.

Scurvy represents a specific deficiency disease which is diminishing in frequency in infancy. It is dependent upon the continued use of a diet low in vitamin C. Its prophylaxis consists in the administration of the vitamin which is contained in large amounts in the juice of citrous fruits, such as orange, lemon, or grapefruit, in tomatoes and to a less extent in the leafy vegetables and milk.

Nutritional anemias are seen in cases where the diet is faulty, where severe nutritional disorders or rickets have occurred, or where there has been inadequate sunlight. The anemia may be quite severe and is usually of the chlorotic type, a relatively high red cell count associated with a reduction of hemoglobin. Their prevention is based upon proper feeding, and the addition of green vegetables and vitamin containing

foodstuffs, and the ultraviolet light early in infancy.

Glandular Disturbances. Of the disorders of the glands of internal secretion, thyroid deficiency is the principal one seen during infancy. It manifests itself by obesity, present at birth as a rule and contantly present during the first year, delay in normal development, dryness of the hair and skin, and retarded mentality. It is treated by supplying thyroid extract by mouth. Its early recognition and treatment is of great importance in regard to the normal development of the individual.

Prevention of infections will be only briefly mentioned in this paper. Diet, fresh air, sunlight and vitamines are all of importance in increasing the resistance to respiratory tract infections. Protecting the infant against exposure to many individuals, either children or adults, is an important factor in this connection. Overheated apartments and overdressing the child play a definite role in increasing the susceptibility to infection.

As far as specific protection against infections is concerned, two measures should be carried out as a routine in the infant's care. First and most important of these is toxin-antitoxin administration to protect against diphtheria. Protection against this infection should be carried out at about one year of age and should be followed in three to six months with a Shick test to verify complete protection. It is preferable to use a mixture in which the antitoxic serum is either that of the sheep or goat, since by so doing one avoids sensitization to horse serum, which is so commonly used in therapeutic sera. Toxoid may also be used to advantage in infancy.

Smallpox vaccination should be carried out some time between the twelfth and eighteenth month.

Other prophylactic inoculations, such as active immunization against scarlet fever, passive immunization against measles, the use of vaccines in an attempt to immunize against common colds, are of questionable value and have no place as a routine procedure in the care of infants.

Summary and Conclusions. The infant death rate has been steadily diminishing during the present century. The most important factors in infant mortality are gastro-intestinal disorders, prematurity and congenital debility, and respiratory tract infections. Proper prenatal care and attention to feeding are important factors in reducing infant mortality. More particularly, breast feeding is a tremendous protection against the hazards of the first year of life, and every effort should be made to continue it for at least the first three months and, if possible, for the first six months.

A proper understanding of the nutrition and general hygiene of infancy will contribute much not only toward diminishing infant mortality, but also toward the development of an individual most nearly approaching the ideal one.

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EXTERNAL POPLITEAL NERVE INJURIES

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The comparatively scant experience in nerve surgery of the average general surgeon, to which class most of us belong, would seem to make a brief discussion of injuries to one of the more frequently involved peripheral nerves worth while, especially since the subcutaneous injury to this nerve is uncommon and its recovery notably discouraging.

The external popliteal seems to rank about fifth in frequence of involvement as compared with those more often injured. Somewhere between ten and fifteen per cent. of peripheral injuries are concerned with the external popliteal nerve.

A review of 39 articles published during and since the World War reveals the vast development of neurological surgery coming out of this conflict and emphasizes how comparatively little practical experience pre-existed to bolster up the scientific conclusions that were previously arrived at. This review of the literature during the past winter suggests that neurological surgery more than some other branches, with the notable exception of fractures, profited particularly from the misfortunes of war and had been waiting for this wealth of material for its present practical development.

The work in the general hospitals in this country and Europe has now been long enough concluded to tabulate the end-results for recovery of function after nerve injuries or operation.

What in the pre-war period was probably regarded as bold or presumptive is, under immaculate present day technique, routine procedure.

It is possible that not only severe but also trivial force applied anywhere from the lower pelvis down to the level of the upper portion of the fibula may result in an injury to the external popliteal nerve. Fractures, contusions, stab wounds, crushing injuries, and constriction or pressure may cause more or less severe injury to the sciatic or its branches. Sciatic injuries with surprising rapidity settle down into partial or complete paralysis of the external popliteal branch, while the internal branch escapes with much less injury. Neuromas following injuries are palpated along the course of the sciatic in the thigh. Some authors are convinced that external popliteal involvements were incomplete sciatic lesions at first. There is no question but that many fractures produce temporary as well as permanent injuries to the external popliteal. This nerve supplies muscles which act against gravity and its compression, lateral notching or section results in a definite paralysis of the anterior tibial, extensor longus hallucis, extensor longus digitorum and the peronei. No extensive clinical experience is required to observe the foot-drop and steppage gait which results, or the sensory disturbance in the dorsal cleft between the great and second toes and over the dorsum of the foot. While lesions of the internal politeal may pass unobserved, there would seem to be little excuse for missing a paralysis of the external branch of the sciatic which shows loss of sensation over the lateral aspect of the leg and foot, loss of eversion and extension of the foot and loss of extension in the metacarpophalangeal joints.

Unless one has reached that pinnacle of distinction on which he may be known as a neurological surgeon, he must associate himself with a neurologist in all important nerve injuries for the mapping of overlap areas, the determination of deep, protopathic or epicritic sensibility, the proper use and interpretation of faradic and galvanic stimulation, the identification of the reaction of degeneration, the measuring of atrophy, the testing of vibration perception, the demonstration of the supplementary function of sensation of adjacent nerves and Tinel's and other tests having for their object the differentiation of anatomic section from a lesser injury in cases of complete loss of function. The review of the literature in the preparation of this paper and the reading of many case reports from war hospital records should convince one that even the neurologists have failed to find a way to make this differentiation. Surgeons have been mystified by the efforts of various nerve specialists to tabulate elaborate syndromes and classify group symptoms under definite headings. When the neurologist finds little of importance to contribute to the solution of the surgeon's problems, his phraseology, particularly involving the sensory changes in peripheral nerves, is discouragingly astounding; but when positive findings are recorded by the neurologist, the surgeon realizes how essential the nerve opinion is, either in conjunction with operative or expectant treatment. The fact that a neurologist either accepts or refuses the blame for either an operative or a non-operative decision in most peripheral nerve injuries in no way relieves the surgeon from responsibility. He must decide as between immediate operation and expectant treatment. After four to six months he must again decide as between the wisdom of surgical or non-surgical care of the patient. During the waiting periods he must remember that the calf muscles are five times stronger than those supplied by the external popliteal and he is therefore responsible for the proper splinting and support of paralyzed muscles against the overaction of their opponents, some of which may be involved in a partial and unseen paralysis of the internal popliteal. He must exhaust every effort through physiotherapy and the possible use of electricity to encourage return of function both before and after operation.

Since only the ulnar, musculospiral and external popliteal are near enough the surface to be subject to pressure injuries, the following case may be of interest. It would seem surprising that more cases of external popliteal paralysis do not result from such accidents as falls striking the force of the body on the outer aspect of the knee. I have observed one case of transitory external popliteal involvement in a motor officer who side-swiped his knee against the running board of a speeding car.

CASE REPORT

Mr. D. R. K., aged 34 years, was admitted to the

Evanston Hospital, March 3, 1928, with a history of an automobile accident forty-eight hours previously in connection with which the injury appeared to be due to either the striking of the region of the head of the left fibula against the brake-lever or to the fact that the patient was pinned beneath his overturned car in such a way that pressure was exerted upon the area mentioned. There was no immediate evidence of contusion, laceration or other injury. The previous history of this patient included a number of abscessed teeth, a chronic sinus infection, a slight hyperthyroidism with a metabolic rate of +17, and a nervous disposition. The patient was seen in conference by Drs. Bassoe and David.

Examination revealed a left foot drop with no dorsiflexion or lateral motion. The skin of the dorsum of the left foot was glossy after the second or third day and the toes were held in extension. There was no pulsation palpable in either the dorsalis pedis or the posterior tibial arteries. One of us felt a diffuse pulsation in the left popliteal space which suggested a popliteal aneurism, the pressure from which might be responsible for the paralysis observed. There was an extensive eccymosis after the third day of the posterior aspect of the left leg and thigh with no apparent swelling present. There was loss of sensation in all the toes and diminished sensation in the dorsum of the foot. A trophic area of redness was observed on the back of the heel. Films of the lower half of the femur and the upper half of the tibia and fibula showed no fracture. Inasmuch as our neurological and surgical opinions differed with reference to the presence of a popliteal aneurism the case was treated expectantly as a paralysis of the left external popliteal nerve.

The patient was in the hospital eighty-four days, during which time the left foot was maintained in neutral dorsiflexion with various types of removable splints. After a period of three weeks, physiotherapy and massage were conducted throughout his stay. During the first three weeks his temperature varied from an A. M. normal to an evening 100°. The pulse varied between 90 and 110. During this period he complained of considerable nausea, sweating particularly of the foot, numbness of the instep and marked pain in the dorsum of the foot which required morphin or codein much of the time. One month after admission foot jerking was noticed when the patient was seated with the leg hanging down. Two months after admission he was able to take steps alone supported by crutches in a walking cast retaining the foot in dorsiflexion. He spent the summer on Cape Cod, most of the time in a bathing suit, where massage and physiotherapy were conducted under the direction of Dr. Phillip D. Wilson of Boston.

On November 18, 1928, the patient returned to the Evanston Hospital. The examination at this time showed no pulsation in the dorsalis pedis or posterior tibial and no improvement whatever in the paralysis. There was present a fair degree of atrophy particularly of the anterior tibial and peroneal groups. Those of us associated in his care agreed that sufficient time had elapsed for physiological restoration, and it was decided to expose the external popliteal nerve.

Operation of Neurolysis. An incision was made from the upper margin of the left popliteal space along the mesial border of the biceps tendon and prolonged downward with a curve over the region of the head of the fibula. The nerve was exposed and freed well up above the popliteal area and down to its entrance into the belly of the peroneus longus muscle. It was found to be flattened about 50 per cent. over the head of the fibula where it was bound down by many small bands of adhesions. There was no evidence of a neuroma nor an interstitial hemotoma. The sheath remained intact and there was no lateral indentation. No new tissue was observed which might be impenetrable to axis cylinders. A free transplant of fat was removed from the upper outer aspect of the left thigh to form a new bed and roof for the nerve for a length of three inches over the fibular head. The wound was closed in the usual manner without drainage and healed satisfactorily without wound infection. The immediate postoperative trend was characterized by an increase of his former pain, particularly in the dorsum of the foot and toes. After two weeks massage and physiotherapy were resumed and he was discharged from the hospital on December 22, 1928, in a walking dorsiflexion splint, feeling in better health generally, without pain, but with no demonstrable improvement in the paralysis. A neurological examination made by Dr. Peter Bassoe, February 27, 1929, one year after the injury and three months after operation, showed the following findings: "There has been a great improvement since my last examination on May 13. I now could feel pulsation in the dorsalis pedis and the foot is warm. The aerea of anesthesia is smaller and there is a little evidence of return of power in the extensors of the foot. However, the atrophy is quite marked and reaction of degeneration is present. The atrophy of the extensors is so great that even with the galvanic current it is impossible to produce extension of the foot, because the current diffuses to the flexors. The external popliteal nerve is notorious for the slowness or even failure of return to normal function after injury. In this case, however, the fact that there has been an improvement at all makes it reasonable to suppose that a fair power of extension will have returned a year from now, and that the muscles will gradually grow larger and stronger.

"I am satisfied from my tests that electric treatment is not worth while. The exercise that he gets in walking about is probably his best remedy, and in addition some other ordinary massage would be permissible."

Conclusions

The following conclusions were reached from the literature and the experience of this case:

Results of injuries to the external popliteal are usually discouraging.

Restoration of function or even improvement often require months or years.

Injuries of the external popliteal, particularly in conjunction with fractures, often require immediate operation.

Modern technique in either neurolysis, grafting, use of flaps, or suture has markedly improved the end results.

The collaboration of an excellent neurologist is usually essential.

Persistent total or partial interruption in the external popliteal calls for operative relief.

The removal of a neuroma, glioma or intervening cicatricial tissue must be made far enough back from the stumps so that the distal progress of neuraxes may be uninterrupted after suture.

Such flexion or extension of the knee joint or even transplantation of the nerve must be made as will relieve the suture line of all tension while healing.

The fact that neuraxes grow about 1 m.m. per day or about 1 inch per month, when explained to the patient, would seem to encourage that degree of co-operation which is necessary in the conduct of a prolonged recovery.

Nerve grafts longer than 12 c.m. are not successful.

It is never too late to attempt an operative nerve repair of the external popliteal.

Early suture, even if unsuccessful, has the redeeming feature of preventing retraction of the stumps if re-operation is indicated.

Tinel's test would not seem to be a sufficient contraindication to surgical interference.

The superficial position of the external popliteal and its comparatively easy exposure above the peroneus longus offer little excuse for its surgical neglect.

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PRESENT STATUS OF EPIDEMIC ENCEPHALITIS LETHARGICA (E.E.L.)*

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Introduction. "The remarkable and polymorphous disease of E.E.L. (Epidemic Encephalitis Lethargica) made its dramatic advent on a war torn world: its rapid diffusion to all continents and the islands of the seas, its striking and characteristic pathological picture, its astonishing masquerade in the guise of a myriad of other diseases, its remarkable shift of group types in succeeding years of its recurrence, and its almost unforetellable course in any individual case has no parallel in the entire field of medicine. And it is doubtful if any plague has ever been visited upon humanity that has claimed so many victims, has so completely covered the earth, and left so many maimed and cripped wrecks in its wake." [1]

History. First identified in 1917 by von Economo of Vienna.

Winter of 1918-19, pandemic.

Winter of 1922-23, another world wide pandemic.

Winter of 1923-24, an epidemic in England with 10,000 cases. Manchester epidemic studied by the National Research Council and no conclusion reached as to transmission or epidemiology. Out of 141 cases, 13 apparently fully recovered; 40 died; and 3 had developed paralysis agitans already before the report had been completed, and in only 7 cases were the British authorities able to find any conclusion as to transmission and in none of them were they sure.

Winter of 1926, epidemic in Japan with 40% deaths; again epidemic there 1929.

Too soon to forecast whether it will remain pandemic or grow in localized severity or subside to return periodically.

Incidence. In 1926-27, Dr. Lorenze of Madison sent a questionnaire to every practicing physician in the State of Wisconsin to ascertain the number of cases in the State which had been diagnosed E.E.L. and their condition. There were reported back to him 643 cases, of which 240 needed institutional care, including those who were already receiving institutional care. Now, Wisconsin has a population of 2½ million, which is about the population of the city of Chicago. Assuming two-fifths of the actual cases were diagnosed, Wisconsin probably had, according to my figures, 1,600 cases, or 61 per 100,000 population.

Among my charity patients in Chicago since 1921, out of 8,000 neuro-psychiatric patients I have seen 200 cases of E.E.L. or about 2%. In private practice and in hospitals I have seen about 100 more such cases. Also in jails and other institutions of all kinds I have run across E.E.L. cases. Therefore, I reckon that in the metropolitan district of Chicago there are about 1,500 living cases of E.E.L., and in downstate Illinois about 1,000 more living cases of encephalitis. Dr. Ball of St. Paul, in a letter to me about a patient, said: "I also consider the possibility that this man has E.E.L. If all my patients had this damnable disease, I would suicide. As I review my case histories, I see now that I have overlooked this diagnosis much too often."

Studies of the distribution of this disease show that there is no preponderance found in either sex nor in any age group. It is evenly distributed from 3 months of age to 70 years of age. It is found in all walks of life—the well-to-do, middle class, poor and the very poor. It is found in all races, in all communities—suburban and urban and rural. It is developed in persons of good and variously impaired health. Only once have I seen two cases in the same household. It is ubiquitous. However, it is

*Read before the McLean County Medical Society, Bloomington, Ill., October 15, 1929.

1. Epidemic Encephalitis, Leo N. Crafts, Pub. Badger, Boston, 1927.

found more frequently in some states than in others, i. e., more in New York than in Rhode Island per 100,000.

The outstanding sequel has varied, depending on the year the patient acquired the disease. The outstanding symptom in the acute stage has also varied largely, depending on the year. In 1918-19, the bulk of the cases had diplopia and somnolence; the next winter there ware more cases of delirium and insomnia and not so much sleepiness. Most of the patients living now who were sick in 1918 and 1919 are lethargic and sleep a great deal. Most of the patients who were acutely sick in 1920 and 1921 now show Parkinsonism symptoms. This was most marked at Mountefiore Hospital in New York City, where the wards quickly filled up when the hospital was opened. Most of the patients presented just that one type of pathology.

Etiology. The various viewpoints as to the cause are many, but these are most frequently considered:

1. That it is influenza.
2. That it is a modified influenza-meningitis.
3. That it is a mutation form of influenza.
4. That it follows influenza and must be preceded by influenza.
5. That it is due to a green streptococcus.
6. That it is related to epidemic hiccough or epidemic torticollis.
7. That it is associated with vaccination.
8. That it is associated with the virus of measles.
9. That it is associated with the virus of herpes.
10. That it is not due to Leviditi's virus nor due to the ordinary epidemic encephalitis found in rabbits.
11. That it is a winter form (mutation form?) of a neurotropic virus, other forms of which cause polio myelitis, multiple sclerosis and other and rarer progressive nervous diseases.
12. That it is due to its own specific virus, a virus which by involvement of the sympathetic nervous system causes herpes and which when inoculated into experimental animals causes typical and transmissible encephalitis. This is my belief, but I cannot prove it until it has been transmitted from animals back into humans. Such a strain of herpes was isolated by LeFevre at the Pasteur Institute, Brussels, Belgium, working under Bordet, and brought to this country by Dr. Earl B. McKinley, who was there with LeFevre when working on that problem at that same time. It may be that there are several or many types of Herpes Virus, e. g., A. B. C, etc.
13. It is generally agreed and concluded that E.E.L. is of some specific cause, and that it is a disease entity and not merely a syndrome.

It has been assumed that its mode of entrance is through the nasal pharynx, especially if chilled; this has not been proven. It has been assumed that it is an air borne disease; this has not been proven. There is on record a case of E.E.L. who swapped cigarets and cigaret holders with two surgical cases lying on each side of him in bed in a hospital ward and both of these men developed encephalitis.

The incubation period is unknown and will be unknown until humans may be inoculated with this disease.

It has been assumed that the distribution within the body is by the blood stream. This has not been proven nor has distribution via the lymphatics been excluded.

It is empiric for us to say that the incubation period is a matter of so many days, months or years, and we can with no certainty say that it is or is not related to any particular thing, such as military duty. It may be that E.E.L. is due to two conditions, one being the virus and the other some predisposing or concomitant cause, just as Vincent's angina is due to two dissimilar organisms acting at the same time or in relation to each other.

Pathology. Post mortem findings in the brain show some injection; the brain is wet on section, with red points here and there. The vessels are dilated, the perivascular spaces are dilated, and the blood vessels are surrounded by an infiltration of small mononuclear cells. In the involved areas there is cloudy swelling, inflammation, and some degeneration of the brain cells. Because there is more inflammation than degeneration, the prognosis is not necessarily bad and remissions should be invoked by proper treatment.

The basal ganglia are most often involved. Especially are involved the optic-striate regions, the crura, the pons and the nigra. In the Parkinsonian cases, the pallida and striate are usually

involved. The medulla is rarely involved. There may be involvement of the nuclei of *any* of the cranial nerves, or of *any* tract, especially these tracts—tecto-spinal, rubro-spinal, pyramidal, or extra-pyramidal tracts. The root zones may be involved. The peripheral nerves may be involved as in neuritis, and I have seen a case so severe that alcohol injections had to be given, even though there was subsequent atrophy. The sympathetics may be involved, and in my opinion the sympathetic usually are involved.

I regard this as a toxemia: where I cannot say, but I believe that the virus makes a nest for itself in some tissue, maybe in the sympathetic ganglia and from that zone the toxic material is spread. It spreads in two characteristic ways: there is, in the acute stages, a systemic toxemia resembling the toxemia of influenza. There is also a toxemia involving the brain much like the toxemia in Botulism. The areas poisoned by the toxin from this virus show local inflammation leading to more or less degeneration.

There are no clinical laboratory tests for this disease which are reliable. There is not yet available any diagnostic spinal fluid test, but the need for some such test is enormous and research work is being done to develop some such test.

There are no body symptoms which of themselves or in combination with each other which are absolutely diagnostic. The disease is more multi-form than syphilis.

Onset and Course. The onset in more than half of the cases is acute and resembles influenza. In many cases, in my series about 1/7 of the cases, it is recalled that the onset was preceded by a persistent herpes. In some cases, the onset is insidious, and in a few cases the patients cannot give a history of any onset until they develop either rigidity or tremors. One author describes this onset as follows: "It shows a diversity of syndromes altogether unequaled by any other known disease. For the introduction may be as diverse as is its later unfolding. In one the initiation may be as that of an attack of influenza with general malaise, headache, generalized pain, marked prostration, elevation of temperature, gastro-intestinal disturbances. Another may approach very insidiously and slowly masquerading for weeks or months as a simple neurasthenic condition. Or a fulminating advent may strike with startling suddenness resembling exactly an acute ptomaine poisoning, accompanied with vomiting and purging. Or again it may be ushered in by an apoplectiform attack or epileptiform seizure, with or without loss of consciousness. Or the picture may at first counterfeit an acute abdominal surgical state. While yet another simulates a neoplasmic brain lesion, or one of the spinal cord. And in still others various mental complexes are very exactly imitated, at the outset, perhaps ushered in by mild maniacal excitement, or some degree of depression with or without restlessness. While in a young subject the picture may exactly resemble early dementia precox, of either simple or catatonic type. In other cases some single symptom appears and continues alone for an undetermined time, like vertigo, tetanic spasm of individual muscles, sudden blindness in one eye, perhaps to subside, either to reappear or be followed by altogether undeterminable congeries. That is, at its inception, or at later points in its progress epidemic encephalitis in any individual instance may present an almost exact resemblance to practicaly *any* known disease of the nervous system, either functional, inflammatory or degenerative in character, or the neoplastic, as well as those of the psychos. And these imitative pictures are not entirely confined to the nervous system either, but may also be found in the surgical sphere and that of general medicine as well."[1]

The course is essentially progressive with exacerbations leaving the patient at a lower level with each exacerbation. It is not a self limiting disease with sequellae. It is a progressive disease with new complications. These exacerbations may be brought about by impairment of the health, especially by drinking or injuring the head, or may be brought about by emotional excitement and feeling panicky. It leads to a total permanent disability, physical and mental. Fortunately it is painless as a rule and does not cause irritability or depression. These patients are easy to handle. I regard this disease, as far as its progression goes, as midway between general paralysis and Huntington's chorea. Therefore, ten to fifteen years would be the average expectancy of life of a case after surviving the acute stage, the last years being spent in a paralytic and somewhat de-

mented state. This dementia is not accompanied with insight.

In general the course is an acute onset, influenzoid in character, following which the patients usually appear perfectly well for a year or two. Then stiffness or other symptoms develop following which tremors, wet mouth and mental impairment appear. The progress of the disease may be arrested at any level but in most cases it is progressive by stages. I do not regard the Parkinsonian and other states as residuals or sequellae of a self-limiting disease, but as an advanced stage in a progressing disease.

Clinical Forms. I know no modern acceptable classifications of the clinical forms, but a classification brought out in 1921 by A. L. Barker listed the following ten forms:

1. Somnolent-ophthalmoplegic (febrile or afebrile).
2. Paralytic (akinetic or hypokinetic).
3. Amyostatic (Parkinson-like, cataleptic syndromes).
4. Hyperkinetic (myoclonic, choreiform, epileptoid).
5. Psychotic (delirious, maniacal, depressive, etc.).
6. Hyperalgesic (various painful forms).
7. Tabetic (Argyll Robertson pupils, abolished reflexes).
8. Ataxic (chiefly cerebellar type).
9. Abortive (Formes frustes: imperfect, rudimentary, ambulatory).
10. Aberrant (intestinal, cutaneous, vagal, etc.).

Symptoms. "No other disease process affecting the central nervous system presents anything approaching the multitudinous syndromes found in cases of encephalitis; nor such manifold and rapidly shifting features in the same case; nor one that masquerades in the guise of so many other affections of the nervous system, both functional and organic, so protean, so kaleidoscopic and so bewildering. There is, too, such marked variability in symptoms and groups, and symptoms and congeries shift so swiftly and in such a volatile way during the progress of almost any case, that no single group picture can be properly denominated as classical."[1]

1. Somnolence or lethargy; variable in degree, duration, time of appearance, may be early or late in the disease; may be absent. Reversal of sleep has often been observed.

2. Headache (H. A.); variable in degree, location, in characteristics, duration, or stage of disease; may be absent; when it appears it is sometimes related to increased intra-cranial pressure.

3. Emesis; rare.

4. Vertigo; usually moderate and inconstant.

5. Eyes; strabismus, dimness, optic neuritis and optic atrophy rare; retinitis; papillitis (or choked disc) rare, probably from general cerebral edema and improved or relieved by spinal drainage, but if not relievable carries a grave prognosis; variable degree of blindness, ptosis unilateral or bilateral; exophthalmos or enophthalmos; conjunctivitis; diplopia, either slight and transitory or more marked and sustained, with images slightly or widely separated in the same plane or above each other or above and to one side and it may be for distant objects only or for both near and those further away; paralysis of the intrinsic muscles of the eye is really frequent though rarely observed and may in some cases only be helped by glasses; nystagmus is frequent and of every possibility in rate, fineness, in the horizontal plane or vertical or rotary, and involving one eye or both eyes equally or unequally; spasm of the extrinsic muscles of the eyes or of the lids or nictitating spasm; pupils may be unequal for a short time or throughout life and may vary from equality to inequality and may vary in diameter from much contracted to widely dilated, may be irregular in outline, may be sluggish, may be Argyll-Robertson type, may be the opposite of the A.R. type; the power of accommodation is impaired whether the intrinsic muscles are involved by spasm or by paralysis; there may be sympathetic or external pressure or complete or unilateral or bilateral opthalmoplegia; lacrimation variable in extent and duration. In conclusion I may say that I have seen more different types of eye pathology in my patients than I knew existed or that I have seen reported in literature, even by Pardee in New York. It will be a pleasure to have an excellent eye pathologist see a few hundred

cases such as we have around Chicago for the basis of a paper by him.

6. Other cranial nerves; they all may be involved; smell, rare; hearing, rare; facial, rare; trifacial both sensory and motor symptoms such as neuralgia or difficulty in mastication due to weakness or spasm; facial nerve with very temporary Bell's palsy; disorder of taste or the muscles of the tongue or of swallowing; disorder of equilibrium; tic; torticollis; torsion of the back; hoarseness (11th); atrophy of the tongue; conditions resembling bulbar paralysis and pseudo bulbar paralysis.

7. Spinal Nervous System—

7 A—Sensory

7 B—Motor

7 A—Sensory—sensory changes in chronic states are not as severe or incapacitating as the sensory changes in the acute phases and thus the sensory is diametrically different from the motor; rheumatoid pains, headache, trifacial neuralgia, other neuralgia, sciatica, neuritis elsewhere and sometimes diffuse pain in the abdomen resembling surgical conditions; the amount of pain, the fixity of the pain, the duration and recurrence all vary greatly and may vary in the same individual.

Sometimes there is numbness, tingling, paresthesia, hyperesthesia and hypoesthesia; girdle sensations and shooting pains are very rare but have been found in some cases.

7 B—Motor system frequently involved, located in

a. tracts resembling amyotrophic lateral sclerosis.

b. anterior horns

c. root zones (radiculitis)

d. plexuses

e. peripheral nerves.

Disorder of function

a. heightened muscular activity

b. sluggish or retarded activity

c. diminished or lost power of motion

d. reflexes.

a. Heightened muscular activity—may be athetoid or choreiform usually localized in one extremity or in two extremities on the same side and may vary from very slight to so severe as to be incapacitating, exhausting and requiring restraint. It may be a fine tremor or even a mild chronic spasm sometimes resembling epilepsy; may resemble tic or may resemble fibrillary or nictitating spasm (especially of the lids) or even grimaces. The tremors often are slight and fleeting and may involve only a small part such as a part of the face. The tongue usually is involved if the tremors are coarse and if there is sialorrhoea. There may also be trembling of which the patients are quite conscious and which keeps them from gainful employment. The quivering may involve the whole body and also the head.

b. Sluggish or retarded activity—muscular weakness localized or general, temporary or permanent but rarely involving the involuntary muscles or peristalysis; motor loss in the extremities is usually spastic.

Coordination; ataxia is more often of cerebellar than locomotor type; may incapacitate the patients so they are bedridden.

c. Diminished or lost power of motion — paralysis usually monoplegia or hemiplegia but may be paraplegia, frequently preceded by numbness and stiffness; there may be atrophy in these spastic limbs; there may be contractures.

The spasticity involves the face, the hips, shoulders, elbows and sometimes the knees as described so long ago by Parkinson himself.

Motion is slow in starting and slow in execution. The spasticity may lead to weird or grotesque postures such as a young woman at Oak Forest who listed about 30 degrees to the right side and 10 degrees back. Occasionally there is rigidity of the neck resembling a Koenig.

d. Reflexes—the deep as well as the superficial reflexes usually are normal, sometimes are increased or diminished or lost and the change may be localized and to one side or to one quadrant or any combination of parts. The reflex changes usually are not permanent. Babinski is common and may be found for a few days or for a few months or permanently. Clonus is sometimes present. There frequently is a Romberg.

8. Temperature; rare, but may show sudden changes like sunstroke and is unfavorable.

9. Pulse; related to temperature or intracranial pressure.

10. Respiration; usually normal or related to physical condition or to intra-cranial pressure or to degree of unconsciousness; ataxic breathing and hiccoughing have been noticed, as also have been noticed every recognized disorder of respir-

ation particularly in attacks due to spasticity or ataxia.

11. Mild nasal catarrh or bronchitis or lobar pneumonia or pulmonary edema observed in acute cases.

12. Autonomic or sympathetic, para-sympathetic nervous system involvement;—pathology here not noted but disorder of function is found in practically every case. It varies greatly in different cases and at different times in the same cases.

Skin manifestations of autonomic origin are present such as patchy flushing, eruptions—frequently acneform, herpes (zoster, labial or genital) sometimes repeated, pupil inequality, muscular atrophy, attacks of sweating localized or general, lachrymation or tearing, continuous coryza and rarely dysfunction of the fat or sebacious glands of the skin.

Sialorrhea—sometimes the salivation follows involvement of the parotid gland which gland early becomes indurated. Occasionally there may be a purulent degeneration of the parotid gland. This peculiar parotitis is not as contagious as mumps and does not have the dangerous orchitis. The non-purulent salivation which is the most common form may be so extreme as to cause drooling all the time or may be somewhat less and only a great inconvenience. I think over one-half of my patients have complained of wet mouths; either complained spontaneously or on questioning, and said the condition lasted 1 to 2 years, often clearing up without treatment.

Metabolism:—there may be general emaciation although few of these cases develop bed sores or there may be marked obesity. Usually the obesity occurs in persons who have constitutional or family tendency in that direction. Rarely the obesity rapidly fades away. The obese cases seem to be of the pituitary type. I might here and now say that I have never dared to make a diagnosis of a case of encephalitis involving the endocrine glands, but I have had many cases where I thought the virus of E.E.L. involved the sympathetic nervous system and thus altered the function of the endocrine organs. Pituitary diabetes with wasting of body weight I have seen in cases of E.E.L. and these cases the urine showed no sugar, but the volume of the urine though great was not permanently modified by administering pituitrin.

13. The urine and feces show nothing typical or diagnostic that would not be found with the other changes in the body.

14. Blood chemistry has shown nothing diagnostic. In a few cases there has been an increase of blood sugar and in a few cases an increase in white blood cells.

15. Cerebral spinal fluid according to tests frequently used has shown nothing abnormal or diagnostic. In some cases there is an increase in the sugar contained there. This is a fertile field for research.

16. Physical examination shows nothing diagnostic. The heart may be slow and irregularities of the heart have been found, abdominal symptoms either gastro-intestinal or genito-urinary have not been typical nor diagnostic, but a great deal of pathology has been found in some few cases.

17. Asthenia; easy fatigue, lack of energy, difficulty in application and concentration, disorder of sleep, lacking in endurance are all commonly found both in the acute and in chronic cases. There is a definite impairment in work efficiency so marked that in over one-half of the chronic cases I have seen these patients are totally incapacitated for gainful work. They are not self-supporting because they are so weak.

Mental Symptoms. The usual onset is a variable degree of stupor or of sleep. Some patients begin with insomnia which almost amounts to delirium, but this is not found as commonly now as it was found in cases in 1922. Few of the cases are truly depressed, either early or late; they usually can be led to smile and although there is great retardation in productivity or in motor activity there almost always is post initial or continuous retardation. Therefore the cases are not to be confused with Manic Depressive depression. In later years they are rarely depressed and they may have insight into their condition again differentiating it from manic depression.

Hallucinations are rare.

The state of coma of course must be differentiated from other conditions which it resembles, such as diabetic coma, uremia, catatonia, apoplexy or traumatic.

Restlessness, agitation, continuous motion, sometimes euphoria or exuberance have been observed. Mental confusion with or without re-

tardation, sense of unreality like in a trance, delirium or semi-delirium are indicative of the toxemia. Acute cases which are delirious usually die. Insomnia and sometimes reversal of sleep is the rule although increased somnolence is found at some stage or other in practically every case.

Reduction of cerebration or poverty of thought is very, very common. I have not been able to determine whether these patients think few thoughts per unit of time or like a bottle neck holding back traffic their inability to express themselves gives the impression that they have fewer cerebrations.

Children who have not formed their characteristics nor laid down mature reactions according to a habit-pattern are the ones who usually show behavior disorders. This point is a special study of Earl Bond of Philadelphia. Sometimes adults show a personality change and become unreasonable, quarrelsome, mischievous, or surly and untractable.

Most cases continue to change until they become listless and appear indolent and without ambition, although occasionally a perfectly alert mental state is found to exist in some of them.

Moral degradation is not often found, although my friends in the south tell me that E. E.L. patients there become frightfully erotic, so much so that their wives object to their being home over the week-end because they "pound hell out of them sexually".

Usually these patients are gentle and easily handled, and fit in nicely on the wards and lend themselves well to institutionalization. My opinion is that most cases have dementia of more or less degree, usually slight.

Economically these patients fail and they become dependent on the family or on the community.

Differential Diagnosis. Hysteria, Chorea, Epilepsy. Catatonia, Polyneuritis, Meningitis, Poliomyelitis, Encephalitis, other forms not epidemic lethargic; Multiple sclerosis, Botulism and other food poisonings, Brain tumor, Brain abscess, Manic-Depressive insanity, Tetanus, Rabies, Drug poisonings, Typhoid fever, Degenerative brain conditions, Myoclonia, Hiccough, Progressive muscular atrophy, Myasthenia gravis, Surgical states, and the last two cannot be clinically differentiated, viz., influenza in the acute stage, and paralysis agitans in the chronic stage.

Complications. These are multi-form and can be anticipated knowing the existing pathology. For example, purulent parotitis is usually preceded by hyper-salivation.

Sequels. Dr. Allan C. Parsons made an inquiry into the after-histories of persons attacked by Encephalitis Lethargica in Great Britain for the Ministry of Health, and his report was published in book form in 1928. It is worthy of study by all of us interested in E.E.L. Generally speaking, his conclusions are that of all persons attacked, one-third die in the acute attack. Of those who survive, the disablement in two series of cases (one series of 1,560 cases and the other of 1,744 cases) may be tabulated as follows:

	Series XXI	Series XXII
Sequels not interfering with school or work	61	165
Sequels interfering with school or usual occupation	100	196
Sequels preventing school or usual occupation	180	461

The last number is the largest and, as time goes on, increases. Generally, the symptoms cause total permanent disability.

Prognosis. With the present forms of treatment and with our present knowledge of the disease and limited by our inability to diagnose it exactly in all cases, we must consider the prognosis not at all good for improvement and not good for normal expectancy of life and not at all good for social and economic adequacy.

Treatment. Practically everything has been tried in the form of treatment. From conferences with other doctors and from the literature, I know of at least 40 different forms of treatment. Two are reasonably successful in meeting the symptoms although not effective in controlling the progress of the disease. They are atropine and hyocine, or the mixture of them, known as stramonium, given in 1 grain q.i.d. doses of powdered stramonium leaves in capsules. Probably levero rotatory hyocine is the effective pure alkaloid.

Glucose 10 per cent. to 50 per cent. intravenously alone or together with sodium salicylate and methenamine given in courses is effective in many cases in relieving the cerebral congestion and edema and thus helps by breaking into the

vicious cycle, or by removing aggravating symptoms, but it is only of temporary help.

Of all new forms of therapeusis, the specific sera as developed for various diseases are, in the opinion of the Rockefeller Institute Staff, the only medicants evolved since 1900 which are standing the test of time. Chemical therapeutics rapidly rise and wane. Non-specific biologicals such as foreign proteid therapies vary in esteem. Specific serum like meningitis serum or tetanus serum, smallpox vaccine, typhoid vaccine, etc., only remain popular. There is need for a serum for E.E.L.

Some interesting work is now being done in the west with an anti-herpes serum, and it is being used for clinical trial on some selected cases even in its present state while research is being furthered to purify it. It is a horse serum based on frequent inoculations into the horse of a saline suspension of the brains of rabbits which died of encephalitis after passage into them of a strain of human herpes virus. Microscopic study of sections of rabbit brain after such a passage shows encephalitis of the human (E.E.L.) kind and not the ordinary rabbit epidemic encephalitis of coccidial type. One reason for believing this serum may be *the* specific is that the same rabbit brain emulsion when filtered and added 1 to 1 to the spinal fluid causes a precipitin reaction in cases of E.E.L. when the control fluids show positive.

The mode of administration as now used is a bit complicated, because treatment is given over such a long period of time. If E.E.L. is the only chronic virus disease we know in contrast to measles and smallpox, then the treatment either must be more intense than we are able to give at the present time in order to eradicate the virus, or the treatment must be given over a very, very great length of time, either to neutralize the toxins in the nervous system or to neutralize the toxins in the tissue where the virus grows and thus give the toxin-freed tissues a chance to eradicate the virus. The serum is given intravenously in 5 cc. doses twice a week with preparation first before starting the course of treatment and a routine preparation before each treatment. Preparation in both cases just referred to is to prevent or minimize allergy reactions. The preparation for giving the serum is as follows: Assuming that the serum is to be given Tuesday morning at 10 o'clock—on Monday one-half hour before breakfast, the patient takes by mouth one teaspoonful of calcium in water (hot or cold) or in lemonade; again calcium before lunch on Monday, again calcium before supper on Monday, and again calcium before breakfast on Tuesday. Tuesday at 9:30, the patient is given by hypodermic one-fourth grain of morphine sulphate. Tuesday at 9:55 or 25 minutes later, after the zero hour of first hypo, the patient is given ½ cc. of adrenalin; at 10 oclock or 30 minutes past the zero hour, the patient is given the serum. Initially, to desensitize the patient: on the first day he is given 0.1 cc. normal horse serum into the skin. The next day he is given 0.2 cc. normal horse serum under the skin. On the 5th day he is given 2.0 cc. normal horse serum intravenously. On the 8th day the patient is given 5.0 cc. normal horse serum intravenously. On the 12th day the patient is given 2.0 cc. of anti-herpes serum (i.e., therapeutic horse serum) intravenously, and he is given anti-herpes serum (i.e., therapeutic horse serum) every third to fourth day thereafter or twice a week. Now the calcium mentioned above may be calcium lactate or in another series of cases under treatment at present we use Upjohn's calcionates or in another series of cases under treatment we use calcium-Sandoz or technically calcium gluconate.

The results of this serum treatment are of course sub-judice, but in my opinion the cases treated with anti-herpes serum fall into 3 groups: most of those under treatment for many months appear to have the course and progress of the disease arrested and to have improved remarkably; most of those under treatment 3 to 6 months appear to be getting no worse; and most of those under treatment less than 3 months appear to be unmodified by the treatment, except that all the patients made a slight improvement in the first few weeks which same improvement is observed in practically all control cases who are on any non-specific foreign proteid therapy, although foreign proteid therapy patients show an improvement *only* for the first few weeks. In the next series of cases, attempts will be made to get objective data like tracings, before and during treatment. So far about 2 dozen charity patients, ½ dozen private patients, and almost 2 dozen veterans have been given this form of treatment. The treatment has been given in four hos-

pitals and it is intended to furnish next year some of this anti-herpes serum to a few other institutions. In the meantime work will be done in improving the anti-herpes serum by removing more and more of the proteids and by modifying the rabbit brains by defatting and detoxicating the rabbit brains before they are inoculated into the horses. Unit dosage and the best of various possible modes of administration have not yet been determined.

With proper encouragement, research may be expected to lead to some successful method of combating this new and dreadful enemy of mankind.

SUMMARY

Epidemic Encephalitis Lethargica (E.E.L.) is now a prevalent and serious disease in this country. It is but little understood, except some of its clinical manifestations and sequels. To date researches and studies have not led to effective measures to control it nor to successful treatment. There is not yet available any satisfactory therapy. Every attempt to solve its problems should be encouraged.

It is worthy of a state survey in Illinois by the State Department of Health plus the U. S. Public Health Service plus the State Department of Public Welfare. It is worthy of a national survey by the National Research Council plus the U. S. Veterans Bureau, because the U. S. Veterans Bureau has already the greatest number of cases of E.E.L. in the U. S. on its rolls. In the U. S., there are no special institutions for research, care and custody, treatment, and for comparison of therapies, like there are abroad, but the U. S. Veterans Bureau is considering maintaining its small military hospital at Dwight, Illinois, and making it solely an Encephalitis hospital if the Bureau is sure of medical support from the medical profession in Illinois.

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DISCUSSION

In a general discussion by the members of the McLean County Medical Society it was brought out that this disease has for ten years been mildly epidemic in this community, that the death rate and amounts of disablement are higher than the essayist had indicated, that sometimes it is impossible to differentiate other forms of encephalitis (e. g., post-measles encephalitis with cerebral edema) from epidemic encephalitis lethargica (E.E.L.), that there is a demand for diagnostic laboratory tests, that there is a great demand for adequate therapy both in the acute and in the chronic stages, that clinicians need information about it, that the x-rays in showing adhesions by using lipoidal injections may be of diagnostic assistance, that the state authorities should actively interest themselves in this disease, and by resolution the U. S. Veterans Bureau was notified that the Society not only recommended that the Bureau continue their military hospital at Dwight, but that the Bureau convert it into an encephalitis hospital where a demonstration group of cases may be given adequate care and custody with proper classification and where clinical research may be made, and where by contrast the various therapies may be compared. The Bureau was reassured of the support of the medical profession, for the increase of knowledge gained by either would be shared by all.

WHAT THE PHYSICIANS OF ILLINOIS HAVE A RIGHT TO EXPECT FROM THE COOK COUNTY HOSPITAL

ELLIS KIRK KERR, M.D.

OAK PARK, ILL.

The Cook County hospital is, or will shortly be, the largest hospital in the world. As far as buildings and equipment go it is worthy the great city in which it is located. It has an enviable record in the training of medical men, particularly those who have served as internes. It has furnished clinical and pathological material for teaching medical students for many years. It is still a great teaching centre, in many ways, the greatest in Chicago, owing to the great variety of material offered. It is the only place where internal medicine may be taught in a systematic way with the assurance that when a certain type of clinical case is required, it may be found. It has offered to practitioners for several years a clinical pathological conference of exceptional value and has been the regular meeting place of one of the largest of the component branches of the Chicago Medical Society.

It would seem on listing these activities that the Cook County Hospital has satisfied the logical requirements of the local profession and of the physicians of Illinois. Any hospital such as this has a duty to the community. It is supported by the taxes of the people of Cook County, and is run primarily in behalf of those citizens who are unable to pay for proper care. The people have a right to demand of the physicians who serve voluntarily on the hospital staff that they conduct the hospital to the best advantage of the

patients on the one hand, and for the benefit of the community in acquiring and promulgating medical knowledge on the other hand. The members of the staff of such a hospital should consider that they have not only the privilege of study but also that they are responsible to the entire medical profession in helping to promote medical knowledge. The physicians of Illinois have a right to expect certain things from the Cook County Hospital.

In the first place the Cook County Hospital should be a place for clinical study. One hears a lot about research nowadays, particularly in university circles. We ordinarily associate research with laboratories and guinea-pigs. Experimental research belongs to the universities and is out of place in the hospital except as certain aspects of clinical problems may best be carried out in the laboratory. There are, however, many purely clinical problems, the solution of which lies in the wards and clinical laboratories connected with them. Some of these problems are of purely scientific value with no evident practical application. Frequently such problems turn out to be of great practical value. Many problems are of great practical value while having little scientific interest; this holds particularly for questions of treatment. They are apt to be neglected in university research or the results arrived at are impossible to check on a sufficient number of cases. Such problems are of the utmost importance to the medical profession and should be studied particularly in the large general hospitals. The University of Illinois maintains a research hospital across the street from the Cook County Hospital. The physicians of Illinois have a right to expect the closest cooperation between these institutions and they should be mutually most helpful.

Again the physicians of Illinois have a right to expect that the members of the staff of the Cook County Hospital will give them the benefit of the results of their study. The meetings of the State and of the various county societies are of course open to them to present their findings. Short courses at the hospital yearly should be devoted to the presentation of the results of study and would be well attended were the studies properly presented. Such courses would be an excellent means of showing just what the staff is accomplishing.

Of more importance is the opportunity that should be available for longer periods of post-graduate study by those men who may be found to be deserving. There has developed an unfortunate state of affairs or perhaps better, there has been no attempt to remedy a condition which has always existed. The young man, after serving his interneship, goes out into the world to solve the problem of existence, and there has been no effort to follow him and help him. He has graduated and is licensed to practice medicine but should consider that at least ten years of further study are needed. A large part of the information needed may be acquired by his own efforts, some from his colleagues, some from consultants whom he calls in on his hard cases, from medical meetings, and from various sources. There has been no systematic follow up method devised by which he may be helped. The post-graduate schools leave a lot to be desired. Many of these men could be given the opportunity to join a study team, to do a certain amount of routine work of value and to have the opportunity of browsing in the wards in return. Many men, after a few years of general practice, develop a special interest in a certain department in which they wish to specialize or find they are lacking in certain lines. These men could give their services in return for the opportunity offered to mutual benefit.

A few of the younger men will be found capable of independent research. These men should be given the opportunity to pursue their studies with proper equipment and possibly financial aid. Competent advice should be available to encourage them in their work. Library facilities are fortunately unusually rich in Chicago.

All these things are properly expected of the County Hospital by the physicians of Illinois. It is not easy for the staff of the County Hospital to meet them, however. The staff has been earnestly striving for several years to meet them and has progressed a certain distance. The County Board has recently appointed an eminent pathologist, Dr. Jaffe, as chief of the department of pathology of the hospital, and has made an appropriation to cover the cost of assistants, technicians, etc. The County Board is anxious that the hospital attain a leading place among similar institutions. Much larger appropriations are needed, however. A large hospital such as this

has an immense amount of routine work to be done. Much of the real study must be done in addition to this routine. Scholarships should be made available by the medical schools of the city and possibly by the Chicago Medical Society and the Illinois State Medical Society. The matter of administering such funds as may be available might well be entrusted to a small advisory committee representing the staff, the colleges and the medical societies. The staff needs the backing and moral support of the medical profession of the State in its efforts. With this backing it will be possible to accomplish great things for medicine in general.

The physicians of Illinois should be interested in making Chicago the greatest medical center in the country. The most important factor in this aim is the Cook County Hospital. With a plant representing an outlay of millions, an annual budget representing the income from many more, with the greatest amount and variety of clinical material, there is only needed a relatively small additional sum to make the hospital productive. The cooperation of all the medical organizations in the state is necessary to bring about this result. The staff should be encouraged in their efforts and should be spurred to even greater zeal. There are many obstacles to a complete accomplishment of ideal conditions, but these can be overcome by a united effort by the medical profession of the State.

715 Lake Street.

THE MAKING OF A SURGEON*

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Some twenty years ago at a Christian Fenger memorial banquet Dr. Frank Billings made this significant remark: "There are many excellent operators in Chicago today, but only a few surgeons; at the head of this small group stood the scientist whose memory we are honoring this evening." Billings' remark applies equally well to present-day conditions throughout the country and justifies the comment of a visiting foreign surgeon. This colleague stated that he had witnessed the best and worse surgery while unofficially visiting American hospitals. By bad surgery he did not necessarily mean poor technique —Sir Arbuthnot Lane once remarked of one of our well known operators that he possessed "Simian agility"—rather did he wish to stress the fact that in many operations the indications were faulty, judgment poor or physiologic considerations ignored.

Given a moderate amount of natural manual dexterity, most of us can become operators, but in our hurry to "get there," we are apt to shorten the period of our apprenticeship in surgical knowledge. We, for instance, enjoy the questionable distinction of being the only country in the world having laboratories of surgical technique. During the World War I had occasion to discuss with the late Henri Morestin—a maxillo-facial plastic surgeon, who had also been a gynecologist—the possibilities of drawing more American doctors to the Paris clinics, of supplying us with English-speaking instructors as was done in Berlin and Vienna. Doctor Morestin said to me: "We would be happy to teach our American colleagues what we know, but you are always in too great a hurry!" He then went on to tell me about a certain countryman of ours who, some years before the war had expressed a desire to study gynecology in Paris. "Very well," said Morestin, "the first year you will see my patients with me, watch me operate and study the tissues in my laboratory. The second year you will begin examining patients, making diagnoses and acting as second assistant in the operating room; the third year —" "But, my dear Morestin," said our fellow-countryman, "all this is impossible; I only have three months to spare!" "Would you believe it," added the Frenchman sadly, "your swift American went to Vienna that same day, engaged a privat-docent for three months and, six months later, published a text-book on gynecology!"

It takes time to become a surgeon; not weeks or months, but years of study before the man who is honest with himself can begin to be satisfied with his grasp of this specialty. Complete satisfaction is a sign of decadence; there are continually brought out new physiologic discoveries which may modify surgical indications or operative technique; the internist may cause many present-day surgical diseases to become discarded in favor of more rational procedures—anybody, for instance, who believes that the last word on thyrotoxicosis or on the interrelation of hepatitis,

*Read before the North Shore Medical Society, Jan. 9, 1930.

pancreatitis and cholecystitis has been spoken, is deluding himself.

In 1913 it was my privilege to sit at the feet of Bassini for ten days. Padua, Italy, was too poor to modernize its hospital buildings, operating amphitheater or equipment. The operating table was a piece of slate on four legs, minus any of the head and foot rests, kidney elevators or Trendelenburg tilting devices which we deem so necessary. Bassini and his three assistants sterilized the instruments themselves and took turns giving chloroform anesthesia. Watch in hand, I observed their superb technique. Turn and turn about, each of the three assistants became chief surgeon. There were no useless motions, no loss of time, no rough handling of tissues. Each patient had been carefully studied before the type of operation and its extent was decided upon and it was rare to have to change the pre-operative diagnosis after the four men had passed judgment. In an uncontrollable outburst of enthusiasm I inquired one day how long the quartet had been working together. Pointing to the youngest surgeon, Bassini smilingly said: "This, our infant, has been with me fourteen years; my second assistant eighteen, and my primarius twenty-five!" No wonder they could finish a herniotomy in thirteen minutes or disarticulate at the hip for sarcoma in thirty! We in America cannot duplicate such examples of long-continued association, yet it would be well for the public if similar conditions were possible. Three years' apprenticeship should be the minimum required for an aspirant in surgery, providing that spare hours be devoted to research and operative surgery on the cadaver and dog. By that time judgment will approach parity with technique and enable the young surgeon to undertake all but the rare and highly specialized types of operations, for the correct performance of which the masters can be counted on the fingers of one hand.

The surgeon should not only see that part of a patient which he intends operating upon, he must study the entire body. In order to be able to do this, it is necessary for him to keep abreast of our knowledge of physiology for, not infrequently, the laboratory man or woman will elucidate a new and correct interpretation of a clinical phenomenon which compels the surgeon to alter his own views and change his treatment. It is the physiologist and not the clinician who proved that fever was a protective reaction—antipyretics have justly fallen into disrepute as the result of this one observation. The thoughtful surgeon should watch the infant endocrine studies; while, to date, thyroid extract is the one glandular substance whose usefulness in selected cases is of distinct value, the infant may suddenly attain manhood and displace many of our present day surgical procedures. Bio-chemistry bears watching; surgeons may some day learn or unlearn a lot as the result of new discoveries. While manifestly impossible to read laboratory journals, it does not take long to glance at titles of articles—one will, not infrequently, pick up a hypothesis which may have some surgical importance. This present day is the physiologic era of surgery; we are more and more concerned with nature's processes of defense and repair and all of us should strive to work hand in hand with nature, not against her. As Moynihan truly says: "We do not so much seek to kill germs within a wound as to encourage the wound in its process of resistance to their attacks, to exalt the natural bactericidal power of wound discharges."

Lest some of my friends accuse me of being over-critical regarding the status of surgery in America, permit me to quote from one of Sir Berkely Moynihan's addresses, delivered before and for the benefit of his British colleagues: "Surgery," he says, "is not learned easily. The training is arduous and protracted; indeed, it lasts a man's lifetime. There is today too much bad surgery, surgery performed by those who have, perhaps, some natural skill which has never been trained and moulded to right practice. Much of the inferior work now being done could not continue and would never have begun if the large hospitals today were doing their full duty to the public. The changes that have taken place in surgery, the great increase in the number, intricacy and scope of operations have made it far more necessary than ever before that the surgeon should be a skilled craftsman. To practice the craft with something near perfection a man must surrender his whole life. To attain a certain facility in operative work is not difficult; man is the most imitative creature in the world. Standardation of operations has unhappily led to the too frequent performance of operations and to their performance by those whose judgments has not kept pace with their technical

accomplishments. If surgery is to be something more than a wonderful craft, if it is to be the instrument of research which I believe it to have been, and to be destined to be in the future, those who practice it must have their minds shaped and strengthened by conflict with unsettled problems, not cramped and sterilized by monotonous exercise within a narrow province of static knowledge. The training of the surgeon must not only allow, it must urge his mind to stray beyond the hard boundaries of old knowledge, over the edge of firm beliefs, into wide territories as yet unexplored and even undivined. In this way only is there escape from the danger which besets the surgeon in the future, the peril of facile automatism. In this way may the physiologist be brought back from his vagaries and encouraged to realize that his scientific best fulfils its destiny when it is applied to the understanding of the functions, normal and aberrant, of the organs of man. Advances in surgery are made by men who, to the faculty of observation, add the power of conceiving and carrying out experiments, not in the laboratory only, but also in the operating room and in the wards."

At a recent meeting of the Academy of Medicine of France in Paris, Professor Quenu, seconded by Professor Rouvillois, proposed that the right to perform major operations be reserved to those who, after taking the doctor's degree, have completed supplementary courses of study fitting them for such work, and spent a period of two or three years in a surgical service in which they had opportunities to perform operations themselves under the surveillance of their instructors. After many and long discussions the Academy of Medicine finally adopted this solution which, however, is only a resolution and will not have any direct effect unless it is transformed into a decree by the superior council of public instruction and is finally approved by the minister of public instruction.

Moynihan says that the object of the study of surgery is to "acquire direct knowledge, accumulate facts from a multitude of individual examples to raise a broad truth, to weave generalizations and, in its highest accomplishment to link cause and effect. As science surgery has not only separate existence, but in its wider sense it is related to and dependent upon many other sciences: upon biology, chemistry, physics, anatomy and physiology. Discoveries in these sciences not seldom react upon surgery whose progress has in the past often taken impulse from them, whose progress cannot now continue without them. Surgery is a science of exact observation of inductive reasoning, of pursuit and discovery of broad truths, a method of seeking the causes no less than the remedies of many of the diseases which afflict mankind. As art, surgery is incomparable in the beauty of its medium, in the supreme mastery required for its perfect accomplishment, and in the issues of life, suffering and death which it so powerfully controls." And again: "Surgery, merely of the 'brilliant' kind is a desecration. Such art finds its proper scope in tricks with cards, in juggling with billiard balls, and nimble encounters with bowls of vanishing gold fish!"

The surgeon should have a creative mind, as well as the technical ability to place his ideas on a sound anatomic and physiologic basis; otherwise, he will go through life a routine man, blindy accepting each new fad in technique without subjecting the latter to individual scrutiny. Such a surgeon forcibly reminds one of the well known phonograph advertisement which depicts a dog listening to "his master's voice"!

No opportunity for testing out one's technique on the cadaver or dog should be missed. Visceral surgery should always be learned on living tissues—dog surgery. It is impossible to obtain the proper sense of touch, of resistance to needle and thread, when working in dead tissue. Bone and joint surgery is best learned on the cadaver, unless one is trying out some process of repair. The blood and nerve supply of all parts of the body are of prime importance; this is especially true of visceral resections and anastomoses. The nerve supply of the abdominal wall has been the subject of my associate Dr. P. J. Sarma's studies for the past two years and we confidently hope to see fewer post-operative herniae as the result of this work.

My honest advice to aspiring surgeons is to avoid large surgical meetings, but rather to devote their leisure hours or days in quietly visiting those surgeons whose writings stamp them as original thinkers. To be invited to don mask and gown and lean over the master's shoulder is invaluable; many a technical difficulty is overcome by watching somebody else operating; there is a free interchange of experiences, observations and conclusions not possible in the midst of a

vast concourse of surgeons. Not infrequently one may learn what not to do in a given case by observing difficulties with which the operator is struggling. I know of no better method for banishing discouragement than through these periodic visits; it makes one realize that other colleagues encounter the same disappointments. Most surgeons are at their best when unhampered by large audiences, quietly performing their operations surrounded by a few visitors who silently watch him and as silently draw their own inferences. Whenever time permits, study the charts of those patients you have seen operated upon, consider the clinical indications for the operative procedure and ask permission to follow these patients as they convalesce. No honest surgeon will refuse this privilege; it implies a desire to verify the "raison-d'etre" of the operation by its after effects on the patient himself. When you are teaching surgery there is no more valuable lesson for the students than a procession before their very eyes of patients operated upon at previous clinics. They want to know, and have a right to know, what the final picture looks like. Report your fatalities with post-mortem findings; don't be afraid to discuss a possible error of judgment on your part; be as honest with your students as you should be with your patients. Let your associates, assistants or interns do part of the surgical work; watching is learning. As they show increasing dexterity while maintaining that profound respect for gross anatomy without which nobody can hope to become a surgeon, allow them to attack the more delicate steps of an operation, advising, suggesting and correcting. Not infrequently you will yourself pick up a new technical point or grasp a new idea which you can further develop. Whenever time permits, discuss the preoperative diagnosis of your cases with your interns and get their opinions, with reasons therefor. Remember that your young colleague's brain is seething with undigested theories and facts; he may suggest something you have forgotten or never known, or you may remove some useless barnacle which has been overcrowding his brain cells; in either case somebody profits by the interchange of ideas.

Don't be satisfied with a mere reading of the pathologist's report; study the gross pathology with the technician and keep familiarized with microscopic slides. Question physiologists regarding today's newest theories; they may be facts by tomorrow.

Spend as much time as possible in the x-ray laboratory when fluoroscopic examinations are being made or plates taken. To be able to instantly diagnose a minute ruptured gastric or duodenal ulcer by seeing a thin layer of air between the diaphragm and dome of liver is dramatic and impressive.

Is this life of hard work, of perpetual attempt at improvement which I have endeavored to paint for you worth while; does it pay? There are easier ways of making money than through specialization. Unfortunately, we here in America do not compensate the thinker by according him social distinctions as they have always done in the old world. In Europe a scientist could or can be underpaid because he was and is so immeasurably superior in quality to any man who is merely able to make money, that inferiority in material means really only compensates overwhelming advantages. For better or for worse, in our every day life, we do not place the scientist on a pedestal—far from it. We unmistakenly manifest our adulation for profits and not for knowledge. Facing these uncontrovertible facts, is it worth while becoming a specialist in surgery? Yes, if one is tired of slavish imitation, if one is quality rather than quantity minded, if there is within one the urge for greater individual originality in the conduct of surgery and a refusal to accept the dollar sign as the common denominator of success. Remember that "only he has a beautiful and intensive life who, all his life, pursues an attainable object, never atained—he who, with equal ardor, passes from one objective to another."

PSYCHIC IMPOTENCE IN THE MALE*

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In Urologic practice we are beginning to see with increasing frequency cases of sexual impotence or inability to perform satisfactorily the sexual act in men who are still well within the limits of physical and mental vigor. In the majority of these cases the most complete physical examination fails to disclose any satisfactory cause for the condition. The real cause lies deeper. If we wish to benefit these patients we

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must delve into their mental life by a series of adroit questions, and, gaining the patients' confidence, we are very often able to unearth the real basis of the sexual inability and to correct it. Often the co-operation of a psychiatrist or endocrinologist may be necessary. Personal observation in several such cases will be referred to later, but before doing so it may be of interest to look into some of the current views regarding impotency in the male.

CAUSES OF IMPOTENCY IN THE MALE

Although it is often difficult to draw clear lines of demarcation, yet in a general way the causes of sexual impotence in the male may be classed as: (a) local; (b) functional; (c) psychic.

(a) *Local Causes.* Impotence may be dependent upon some anatomic alteration, either congenital or acquired, which directly involves the sexual organs or tissues and organs which have a physiologic connection with the functions of the sex organs.

Congenital absence of the testes, congenital failure of development of an acquired condition, such as *induratio penis* or traumatism may be such a local cause. In such cases there may be a strong sexual desire. There may or may not be a sufficient power of maintained erection, but there is a mechanical hindrance to copulation. Literature shows an abundance of such cases. Ortali[1] recently reported a case of plastic induration of the penis with impotence due to a gumma of the left *corpus cavernosum.* He had previously[2] reported three other cases in which the etiologic factor was gonorrhea. In such cases there is not only *impotencia coeundi* but also *impotencia generandi* because the penis cannot penetrate the vagina.

(b) *Functional Impotence.* This is a real impotence which may be either complete or incomplete; temporary or permanent. I divide it into three types—the nervous, pathologic, and what may be called biologic.

In connection with the nervous type of functional impotence, we must consider the nervous stimulants to erection, and factors, apart from psychic, such as the internal secretions which may possibly affect these nerve stimulants.

As far as is known the stimulus to erection comes from the central nervous system. It may rise indirectly from the spinal cord roots as we see in cases of traumatism to the cord whereby a priapism is set up.

The cerebral center may be affected by impulses coming from peripheral nerve endings or any irritation of the pubic nerves. It may also be affected by impulses due to excitation of the special senses or by psychic impulses. Possibly some endocrine secretions may have the power of starting nervous excitations which stimulate the erection center of the brain. Whatever may be the source of stimulation of the cerebral center, the consequence is a feeling as natural as that of hunger or thirst, or the desire to urinate when the bladder is distended.

Vecki[4] cites Landois as saying that "continued inactivity of nerves diminishes their irritabilty even to annihilation," and sexual faculties not kept in sufficient practice are weakened thereby. Every gland, consequently also the sexual glands, requires a certain amount of excitation of its nerves in order to produce energetic action. Every muscle, consequently also the muscles of erection, become strengthened only by exercise. Prolonged abstinence as a rule impairs sexual vigor. Under this heading, too, comes what Perry[3] calls *pubic ennui,* a nervous exhaustion limited to the nerves of the sex organs due possibly to focal infection.

It may therefore be accepted that continuous ignoring of the sexual urge, or continence, tends toward a dulling of the power of erection and thus to impotency. Especially is this so when a corresponding psychic condition or a desire to suppress sexual feeling accompanies the continence. This will again be referred to when dealing with psychic impotence.

The first evidences of impending impotence in the sexually continent are premature ejaculation when coitus is attempted, and sexual neurasthenia.

In normal man, quite apart from his own feelings or idea regarding sexuality and the exercise of its functions, there is a natural desire that the pressure of stored semen should be reduced by discharge. This may and does set up a nervous condition by which the ejaculatory organs are excited, quite irrespective of the individual's desires regarding the matter. If consciously suppressed, nature takes care of the situation by effecting the discharge in nocturnal and other

emissions. This, although it may be accompanied by erotic dreams, can scarcely be considered as a psychic, but rather as an organic matter.

We may readily conceive that, since an erection may be due to a conscious impulse, an inhibition of erection may also follow from the same type of conscious or unconscious impulse of the opposite character; and just as a constantly exercised nervous stimulation may ultimately lose its effect, so also the loss of the sexual urge and impotence may in time follow prolonged conscious or subconscious suppression of the impulse to erect. By an act of the will, the idea of erection as a sexual excitant may become an aversion.

So far as we have gone, *impotencia coeundi* may be a purely nervous phenomenon. The power of erection at will, as a direct nervous, sympathetic or reflex nerve function, may be lost. In the extreme cases there may be more or less atrophy of the penis or at least of its erectile tissues and muscles.

The extent to which the gonadal or other endocrine secretions affect the power of erection and full performance of the sexual act is only a matter of conjecture, but one may assume that they do play a conspicuous part and, if so, failure of such secretions, through a fault of development either glandular or nervous, must be considered as a cause of impotency. Eunuchoids come under this heading (as well as those who have some degree of hermaphrodism), although perhaps it would be more proper to class them under the heading of anomalies of anatomic development.

According to Vecki, premature sexual impotency and the subsequent senility are pluriglandular deficiencies. It is evident in many cases of marked thyroid, pituitary or other glandular deficiency, that lack of sexual power and desire is almost constantly present.

Pathologic Functional Impotence. As a general rule, disease of any kind weakens sexual power, and chronic disease may cause sexual impotence. This not only refers to organic lesions but also to psychic lesions. One of the common causes of functional impotence is the improper performances of the sexual act, such as withdrawal or delayed ejaculation. Improper congestion causes premature ejaculation, which causes the over-stimulated nerve centers to become exhausted, resulting ultimately in a condition of impotence.

Biologic Impotence. Senile impotency as a type of biologic impotency is a natural phenomenon and is synchronous with general loss of physical and mental vigor. It scarcely comes within the scope of this paper.

Another type of biologic impotence is that due to lack of co-operation on the part of the conjugal partner—the so-called female frigidity—in which there is a lack of orgasm and a consequent incompleteness and dissatisfaction to the normal man. This lack of mutual satisfaction lessens desire, creates a condition of distaste and a type of aversion, with failure of erection or maintenance of erection and in time impotency, at least as far as the particular partner is concerned.

The human female, constitutionally passive in sexual feeling, has, under modern sociologic progress developed a neuro-degeneracy in sexual functioning. Passivity is becoming an aversion, and the condition is reacting on the male. The divorce court is the sequel according as the man is polygamous or not.

(b) *Psychic Impotence.* In psychic impotence there is no real impotence as in the conditions already mentioned. The patient has really *potentia coeundi et generandi,* but he imagines and is convinced that he has not. Every physician knows that a fixed mental idea suffices to inhibit actual organic functioning and literature abounds with examples where organic dysfunctioning results from purely psychic causes. Furthermore, the actual symptoms of disease may be suffered or simulated by psychotics where the actual disease does not exist. It is not difficult to conceive then that under the circumstances patients may fully convince themselves that they are impotent and may, by the force of such mental conviction, be unable to perform the sexual act, although in reality nothing but their state of mind prevents them from doing so.

Psychic impotence in males is today far more prevalent than is commonly believed. It is no exaggeration to say that most cases of impotence seen by the urologist are of this type. We will find that in the majority of these cases the condition can be traced back to the restrictions

placed by our present day accepted standards of social morals and civilization on the exercise of normal sex functions. There are other causes, of course, but I believe that the cause stated is far ahead of all others as a basis for the spreading psychic impotence. It is an historical fact as well as one observable today that the lower grades of human society are more prone to sexual promiscuity and sexual indulgence than the higher classes.

When we question the causes underlying this development of civilization and progress, we find that economic factors and standards of living are such that a large number of men cannot afford to marry, at least while young. Many deliberately suppress their normal sexual desires; others abuse them to excess without the responsibility of marriage. Those who do marry do not exercise their functions normally either because they do not want or cannot afford to have children; and women, if not actually averse or even hostile to coitus, submit to it unwillingly rather than acquiescently. Civilization and higher education tend to regard the exercise of the sex functions as brutal and degrading, and morality teaches sublimation of sexual desires. All these factors in one way or another favor sexual impotence. The medical man sees that on physiologic and hygienic grounds modern tendencies cannot be reconciled with the observed clinical facts.

I have seen many of the results of impotence myself. Many of these patients are in a subschizophrenic condition, depressed, morose and dissatisfied. I do not feel competent to express an opinion on the purely psychiatric aspects of this matter and I cannot therefore do better than cite some of the opinions expressed by psychologists on this matter.

Steiner, cited by Cassity,[5] classifies psychic impotence into three categories: (a) those affected with inferior constitutional sets; (b) those deterred by pre-adolescent sexual developments through obnoxious familial influences; (c) those developing impotency concomitantly with the onset of senility.

Jones, also cited by Cassity, gives two factors which especially predispose to psychic impotency, viz.: the fear of punishment for sexual activities and the tendency to associate the female genitalia with the organs of excretion.

Cassity himself divides the psychic impotencies into the following groups. First, those patients psychically traumatized at weaning or those mother-bound and who may develop into latent or active homosexuals. Second, those individuals libidinously fixated to pre-adolescent love objects in a fashion latently incestuous. Third, those individuals sexually traumatized through inadvertent pre-adolescent induction of incestuous nature. Fourth, those whose love energies are dissipated for avenging imagined parental neglect or desertion (death or jealously of parent).

Cassity says that in the second group fixation of the libido on an incestuous object, never fulfilled, may cause such an intense orientation in that direction that the individual is incapable of turning toward another. He may ultimately boast of fulfilling the sexual act with his loved one; that is to say, a man loving his sister may, when she is married, claim that he is the father of her child.

Cassity gives examples of psychically impotent individuals coming under all these headings. He generally finds that the functional psychosis bears a relationship to taboos and social prohibitions and that there is a retention of infantile love objects and modes of satisfaction in phantasy-malign pre-adolescent influences which register in the psyche rather than in the sexual soma. Gonadal changes result secondarily from the psychotic disorders, but in younger individuals impotency notions are as a rule stimulated predominantly by psychic factors rather than by actual gonadal disintegration.

Impotencies of the types mentioned by Cassity are no doubt frequently seen in psychotic subjects with obsessions, but they are not exactly the types seen in an urologist's practice. McCartney's[6] classification comes nearer to these latter. He gives as the factors in psychic impotence, fear of consequence, aversion to partner, aversion to the sexual act, jealousy and psychic shock in nervous individuals who are highly impressionable either congenitally or by upbringing.

Fear or anxiety, according to McCartney, is frequently the most important cause of sexual failure, especially with those who have had a mawkish training. Being subject to emissions, they know of the after-weakness and the reading of literature increases the fear in their minds. They continually dwell on supposed mental decay

and loss of manhood and first attempts at coitus are failures. Later, a jest or taunt or worry may result in failure also, and they gradually grow impotent.

In my own experience I have gleaned a number of facts which lead me to believe that the causes of psychic impotence may be extended.

There are many men who on account of the indifference or evident aversion of their conjugal partners to coitus have gradually suppressed their emotional sexual feelings and weaned themselves by degrees from the practice of the sexual act. Having a high sense of rectitude, of fidelity to their spouses in sexual matters, they have never thought of other women, they become deeply absorbed in business matters. After living several years of suppressed sex life they find that they are impotent in regard to their conjugal partner and fully believe themselves completely impotent.

In another class are those who have for years suppressed sexual desires and have forced themselves to continency for other reasons. The final result is that they believe themselves completely impotent also.

Cases of incompatibility of conjugal partners are unfortunately extremely common. Although many of these find a solution in the divorce court, yet there is still a multitude of men who on account of a high personal rectitude and their respect for a contract, or perhaps from a religious motive, would not consider a divorce on such a ground. They dissociate themselves gradually from conjugal relations, and their aversion makes the sexual act distasteful and impossible. Finally they become impotent. In these cases the phenomenon is the opposite to fetishism. They are really impotent to only one particular woman, but they do not know it nor do they believe it.

There are men who are so occupied with their business affairs that they are absent a good deal from homes or their wives are often absent. Suppression of normal sexual exercise becomes a habit with such men. In the absence of extramarital sexual relations, combined with intense over-taxation of brain energy by business, the sexual instinct becomes blunted and inhibited. A condition of impotency and indifference results. Should circumstances arise in which these men desire to exercise sexual relations normally, they find it difficult or almost impossible to do so satisfactorily.

Treatment. In the matter of treatment, I will say only a few words. In impotency due to anatomic malformations, practically nothing of value can be accomplished.

In the functional impotencies, aphrodisiacs, tonics, physical therapy (hydro- and electrotherapy including ultra violet rays) have their indications and may be used with discretion according to the nature of the case. With patients who are temporarily impotent, owing to constant sexual irregularities, all sexual excitants should be proscribed for a period of at least six months. The services of an endocrinologist may be called for in cases in which the internal glandular secretions may be believed to be faulty. No regimen can be laid down for the treatment of functional impotency, as it will depend on the underlying conditions, which must be earnestly sought for.

In psychic impotency the main curative method will be sympathetic psycho-therapy and suggestion to remove the patient's fears and morbid anxiety by persuading him that he is really potent. The ordinary methods of treating functional impotency will do little, if any, good in the case of a psychic impotency. In these cases the psychosis must first be dealt with. These patients, if allowed to brood on their condition, may develop a schizophrenic condition. In this connection I may state that, in discussing Cassity's paper, one of the speakers observed that the development of satisfactory homosexual adjustment is full sexual adjustment from a psychobiologic standpoint and that it insures against schizophrenia as surely as does satisfactorily heterosexual adjustment.

REPORT OF CASES

Case 1. Mr. E. J., aged 36 years; white; married; consulted me for loss of sexual function.

Personal History. Patient never contracted any venereal disease. Has never been of a very ardent sexual nature. Married ten years ago and was able to fulfill his marital relations satisfactorily until four years ago. Since then he has not been able to get an erection or at least only a very transient one. He had come for advice and treatment at his wife's request.

Examination. A thorough physical examination failed to disclose any anatomic or pathologic grounds for his condition. The prostate was not enlarged. Thinking that there may be some endocrine disorder, the patient was referred to Dr. Maximilian Kern for an endocrinologic investigation. Except

for a slight sub-thyroidism the findings were negative. The patient who was nervous and somewhat emotional was of a type that might be affected psychically.

Upon close questioning it was elicited that the man was entirely dominated by his wife of whom he was afraid. He confessed that on a few occasions he had indulged in extra-marital sexual relations and that on the last occasion he had been surprised in the act by a female relation of his paramour. Since then he has lived in terror that the knowledge would reach his wife. The very thought of intercourse has been distasteful to him and since that time he has been unable to perform the act.

This was evidently a case of psychic impotence due to fear. I could only inform the patient to that effect and advise him that the condition would probably continue until he overcame his fear. I do not know the result.

Case 2. Mr. M. H., aged 42 years; Spanish-American; widower.

Personal History. Patient contracted gonorrhea about twenty years ago for which he was treated and states he was cured. He had a new attack two years later which he treated himself and recovered. Married at age of 30 to a woman some years his senior. No children. Although he had always been of a strong sexual disposition, for the last two years he has been impotent, which he thought was due to having had gonorrhea.

Examination. No anatomic or pathologic reasons for his impotency could be found. No evidence of gonorrhea in any part of the uro-genital tract. The external genitalia appeared quite normal and his physical condition in general seemed to be quite perfect.

This was evidently a case of psychic impotence in regard to his relations with his wife. Finally it was elicited that he never had any particular affection for her. His sexual feeling towards her was neutral and intercourse was practiced more as a physical necessity than on account of sexual attraction. About four years ago his wife developed a large disfiguring adenomatous goiter and he confessed that his feeling toward her which previously had been apathetic became one of aversion. He had lost all sexual desire, but from considerations of duty he had never thought of extra-marital intercourse. He had not experienced an erection for over three years. The man's wife died a year ago and he now had the opportunity of marrying a woman he really cared for, but his constant dread of impotence kept him back and he avoided her company.

I advised this man that his condition was psychic; that he should cultivate the company of the woman he liked as much as possible, cease to imagine that he was impotent and encourage his sexual feelings. I saw him several times later and he gleefully informed me that he was overcoming his morbid fear. He has since married and his sexual potency is quite satisfactory and improving with time.

In the two cases following the impotence was more properly a type of fetishism or sexual perversion rather than a true psychic impotence.

Case 3. Mr. H., aged 28 years. In the course of a urologic examination it transpired that he could only experience sexual excitement if the woman urinated, and the excitement was all the stronger if she urinated over his body. It appeared that his first experience of sexual gratification was connected with an episode of this kind and no other sexual stimulation could excite him. He was impotent outside this fact.

I thought that this case was rather peculiar until a short time ago when reading the "History of Florrie" in Havelock Ellis's last issued volume (Vol. vii, 1928) of "Psychology of Sex" several similar cases are related.

Case 4. This case of impotence was in a man aged 38. It was similar to the last case only that in this case the sexual excitation could only be obtained by the smell of feminine perspiration, especially the effluvia from the armpits. With such stimulation the man was quite potent. Without it he could not perform the sexual act unless by a strong imaginary effort he could persuade himself that he was experiencing this particular odor.

Cases of olfactory sexual excitation are of course common enough; but this case may have something uncommon about it in that the man was otherwise impotent; also the peculiarity of the olfactory excitation cause.

CONCLUSION

The physician must deal with disease, its cause and effect, and it is not part of his duties to moralize. This includes both physical and mental diseases. If the sexual function, which is perfectly natural and normal, is not exercised for any reason, sexual potency will be diminished and, according to Steinach, Voronoff, Sand and others, senility and loss of both physical and mental virility will follow because they are closely associated with sexual potency.

The economic and educational conditions of civilized society today and the barriers being set up against the exercise of normal functioning are becoming responsible for a large amount of immature sexual impotency. It may be stated almost as a rule that sexual impotency varies directly with the progress of mental development and civilization. Whether this is a biologic problem is a question which the future must answer. Certainly, impotence as well as other causes tend

toward the extinction of the fittest and to the survival of the "unfittest."

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DISORDERS OF URINATION*

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The more common disorders of micturition arise from: 1. pathology or anomalies in one or more anatomic localizations of the genito-urinary tract; 2. result of general diseases; 3. from nervous causes of either organic or functional character. More particularly these may be grouped under three headings:

1. Disorders of urinary production.
2. Disorders due to obstruction of the conducting system, anywhere from the kidney to the outside.
3. Derangement of the expelling forces.

In the first group we are concerned with anuria or suppression of urine, a condition in which, for one cause or another, no urine reaches the bladder. This disorder must not be confused with retention of urine. Anuria is usually associated with a lesion of one or both kidneys and most often is due to one of the following causes:

Acute congestion of the kidneys.
Acute nephritis.
Terminal stage of chronic nephritis.
Abscess of the kidney.
Hydronephrosis, with or without calculus.
Poisoning—from lead, turpentine, cantharides, phosphorus.
Certain of the acute infectious diseases:
Typhoid.
Pernicious malaria.
Terminal stage of sunstroke.
Thrombosis of the renal vein—vena cava.

Oliguria. A diminution of urinary production below the normal minimum. May be due to any of the above mentioned causes and also to

1. Passive congestion of the kidneys associated with cardiac decompensation.
2. Shock after anesthesia.
3. Depletion of fluids as a result of:
   Prolonged emesis.
   Diarrhea.

The last in this group of disorders of urinary production is *Polyuria,* or excessive production of urine up to 10 litres per diem.

Polyurias may be divided into two groups, those due to disease of the urinary organs or so-called moderate grades of polyuria and the more marked types due to metabolic dyscrasias.

Under the First Group. The following pathologic causes are usually etiologic:

Chronic nephritis.
Amyloid kidney.
Reflex congestion of the kidneys.
Pyelonephritis.
Tuberculosis of the kidney.
Arteriosclerotic kidney.

The extreme polyurias demand examination as to the presence of

Diabetes
Mellitus
Insipidus
Phosphaturia
Uricacidemia

any of which may occasion urinary excretion in excess of 5-6 litres.

Numerically, the greater number of abnormal urinary manifestations is due to one or the other cause of obstruction to the proper and normal exit of the urine from the kidney to outside of the body. To this group the term, the obstructive uropathies, is aptly applied; it may be divided into two main categories:

1. According to location and character of the obstruction.
2. According to the presence or absence of infection.

Pathology anywhere in the urinary or genital tract may produce obstruction, and the nature of the lesion at the site of obstruction may be variable. Pathology in the renal parenchyma itself causing obstructive symptoms is practically due to either renal tumor or tuberculosis, either of which may compromise, to a greater or lesser extent, the renal pelvis.

*Read before the Joint Meeting of the Chicago Urological and Chicago Medical Societies, March 20, 1929.

Stone in the renal pelvis or ureter produces obstructive symptoms of all degrees from a moderate freqnency of dysuria to total suppression of urine. These symptoms are further influenced by the presence of infection.

Simultaneous impaction of bilateral ureteral stone has been reported.

Tumor of the kidney pelvis and ureter is uncommon, but may result in obstructive symptoms.

Ureteral obstruction, including strictures and kinks, occur and may produce varying symptoms from a moderate degree of frequency and dysuria to complete suppression of urine.

1. Lesions of the bladder produce particularly symptoms of:

1. Retention.
2. Incontinence.
3. Retention with incontinence.
4. Painful and difficult urination.

The pathology most often present is:

Stone.
Tumor.
Inflammation, including tuberculosis.
Diverticulum.

The symptoms in any of the above instances depend to a marked degree upon the co-existence of infection.

Other causes are, that group interfering with the proper exit of urine through the bladder neck, more especially hypertrophy of the prostate, prostatic bars, and inflammatory contractions of the vesical neck. These lesions also account for symptoms varying from a mild degree of frequency and dysuria to complete retention, with paradoxical incontinence, which is merely the overflow of urine from an overdistended bladder.

Besides this group are those lesions outside of the bladder which by contiguity affect the normal exit of urine from the bladder, such as retention due to the enlarged uterus of pregnancy, lesions in the pouch of Douglas and pelvic and Retzius space abscesses.

Lesions of the urethra of an obstructive nature, more especially stricture, impacted stone, tumor and inflammations, are capable of producing profound changes in the act of urination and should not be overlooked in differential diagnosis in all cases coming under observation. Periurethral pathology may occasionally be causal.

The *third general group* is disorders due to derangement of the expelling forces, viz.: the detrusor muscle. These derangements may be divided into those due to local causes and those due to lesions of the brain and spinal cord.

Lesions of the bladder interfering with its proper emptying are:

1. Cystitides of various types and grades.
2. Edema and teasing apart of the muscle fibres.
3. Infiltrating tumors.
4. Ulcers.

Nerve Lesions:

1. Cerebral origin—
   Tumors—cysts.
   Hemorrhage.
2. Cord:
   Tabes.
   Cerebrospinal lues.
   Poliomyelitis.
   Lateral sclerosis.
   Syringomyelia.
   Toxic sclerosis of pernicious anemia.
   Gumma.
   Tumors.
   Spina bifida.

Obviously, for a proper and complete understanding of any of the symptom complexes which arise and may be very complicated, one should proceed with a painstaking history, a complete physical examination and necessary laboratory procedures in a routine manner, which is well understood by you all, and then with all available data at hand distinguish, if possible, which one of the particular disorders of functions predominates and attempt to find the underlying pathology occasioning it. Obviously, routine use of appropriate measures in urological study will elucidate the vast majority of the most complicated cases. It may at times be necessary to have the counsel of the neurologist and internist and this should be freely sought. Roentgenology is a most valued adjunct in the diagnosis, especially in conjunction with cystoscopy, ureteral catheterization and urography. The clinical laboratory should be called upon for complete urinalysis, bacteriologic examinations and the estimations of blood chemistry and hematological studies. When a diagnosis is conclusively determined, appropriate therapy then suggests itself, and in certain cases should be very promptly instituted. I refer particularly to those cases of anuria, and those of retention with infection.

THE EDUCATION AND TRAINING OF A NURSE*

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Aesop has written: "A lion may be beholden to a mouse." If I tonight may play the part of the mouse and bring a message to you which may impress a truth or two, or strengthen a conviction, or act as a guide-post in the life-journey of someone, what more could any man wish than that? It would be a dereliction of duty, in such a case, not to accede to the invitation to deliver the graduating address to you; so I have accepted the honor so graciously offered to me by your Superintendent, and am here with you on this auspicious occasion.

Dr. J. Chalmers DaCosta, the famous surgeon of Philadelphia, in a notable address before the ex-resident physicians of the Philadelphia General Hospital, while speaking of the inmates of that great institution and dumping-ground for suffering humanity, adds this striking statement, which is applicable to most large hospitals of the country: "Here are some who seek health, and some who wish for death. Here come the physician, to heal and to teach, and the student, to observe and to learn. Here comes charity to relieve, and religion to console, and the foul blight of municipal politics to annoy, to hamper and to curse; and here, among some of the most unfortunate and some of the worst men living, comes woman, white-capped and cheerful, to comfort and to bless."

Within the life-span of most of those who are here tonight, against the dark background of the past, has dawned the happy day of the trained nurse in hospital and in home. This is a most desirable transition from the old-time period of the middle-aged practical nurse who was so often of the gross and illiterate type made famous by Dickens' Sairy Gamp, burdened with the superstitions and witchcraft of the Middle Ages—a monstrous type that the trained nurse of today has happily supplanted.

It has been no trifling task—the building up of a new system of nursing based on modern scientific principles. Naturally enough, mistakes have been made, as in every new venture, and errors have crept in that have from time to time made their deleterious influence felt. We are living in a period of evolution in education in all of its manifold phases. The medical profession is going through the same modernizing influence, and mistakes have been made in the curricula of medical schools which today we are still endeavoring to remedy. We have not yet reached in medicine or in the development of the trained nurse the acme of perfection, the *sine qua non*, from which point there can be no advancement. Where there is no growth there must be stagnation, decay, death. Progression or regression: that is the inevitable law of nature in all lines of her activity. There is no ideal to which we may attain; there *is* an ideal toward which we may press ever and ever onward, but probably never reach. Perfection in one's profession or calling is like perfection in nature or in religion; it is unattainable, ever receding, but like the *ignis fatuus*, ever coaxing onward. This is the secret of the unrest that leads to growth and progress.

And so, in the development of a trained nurse there are some questions upon which there is not a unanimity of opinion. These have resulted in differences in the courses of training, both as to the subjects taught and the time devoted to the period of training. One by one these questions will reach a correct solution, for we know many trained minds are thinking of them, and there is wisdom in a multitude of counsellors. In this short address I will briefly touch upon one or two of these mooted questions.

"Someone has defined the functions of a nurse as follows: 'To care for the bodily needs of the patient; to carry out the physician's orders; to keep a careful record of the happenings of the sickroom as regards the vital phenomena of the patient.' Everything that the nurse needs to do or know may be grouped under one or another of these functions, and any teaching that contemplates anything beyond this would merely burden the nurse with useless theory or inspire her with the erroneous and fatal idea that she is endowed with the knowledge and skill of the medical attendant."

So writes a distinguished surgeon of one of the large cities of this country.

If this is all that will be expected or required of her is it necessary for any woman endowed with the average gifts of brain and common sense to spend three or four years in acquiring a

*An address delivered to the graduating class of nurses, Post-Graduate Hospital of Chicago, September 18, 1929.

nurse's diploma? Is there not an unnecessary loss of time and energy in the preparation of these girls for their life-work, a confounding of the ideas of education and training? Their schools are properly termed "training schools"; they are never designated as "colleges." Their object is to graduate good nurses, not poor doctors. The fundamental object of the trained nurse is to serve as the skillful attendant to the physician or surgeon in the sick-room or operating hall. She is not in any sense to be regarded as his assistant. The interne or colleague fills this place.

Judging from the definition as given by the surgeon I have quoted, a nurse may be over-educated; she can never be overtrained. Just as absurd would it be to state that a surgeon is over skilled or a physician over expert in his methods of diagnosis. The more training and practical experience a nurse can acquire, the better for her and her patients. But this does not mean the burdening of her brain with medical and surgical facts entirely irrelevant to her vocational duties at the bedside or in the operating-room. All such study, aside from the broadening effect *any* line of education may entail, is useless in as far as the efficiency of the nurse is concerned.

This, I believe, may be regarded as axiomatic —that good nursing is not facilitated by too elaborate an education in professional subjects; rather is it hampered or even rendered useless thereby.

A superficial knowledge of physiology and anatomy, a fairly good idea of the meaning of the symptoms that may develop during the course of a disease or of a post-operative convalescence, together with a pretty thorough acquaintance with hygiene, will generally answer every purpose. It is just as well that the nurse should know that the femur has nothing to do with the arm, and that a fracture means a break in continuity and a dislocation does not, but it is surely beyond her province to expect her to set a broken limb or reduce a dislocation.

Every nurse should know that there are certain disease-bearing or disease-producing germs, and that these may be, and generally are, transmitted to patients by foul surroundings or by unclean hands and instruments; but, as I see it, it is not essential for her to trace the life-history of a bacillus and to enumerate the pyogenic germs; nor will it aid her nursing in the slightest degree to know that the *Bacillus bremensis febris gastrica* will produce symptoms closely resembling those of typhoid fever, but in which the Widal reaction can not be obtained.

A fair knowledge of pharmacy, however, together with the ability to quickly and accurately make percentage solutions, is an excellent adjuvant to the ability to record faithfully a temperature, a pulse-rate and a pulse-respiration ratio. If, in addition, a course of instruction is engrafted upon a fair general education, and this is backed up by a heap of good common sense and an excellent power of observation, so that sudden, or progressive, changes in the patient's condition for the better or for the worse will be promptly noted, then may we expect to find a capable nurse—provided she has the nursing instinct which is so important. For remember this—a good nurse is born, not made, to a large degree.

Again, there should not be any irregularity in the prescribed course of training in a given institution; and as nearly as possible there should be a uniformity in the curricula of the various training schools of the country; that is, I believe there should be a general system adopted by these schools, as far as may be practicable, even as there is by the various medical colleges. Likewise, in the course of instruction prescribed by the training school there should be observed a proper relative proportion in the branches of study. Not all are of equal value. Surgical work, attractive as it is, should not pre-empt to itself the bulk of time, as so frequently it does. More useful by far to the average nurse is the medical course; and no training should be considered as complete without a course in children's diseases, and some months of maternity work.

Above all, there should be a scrupulous avoidance of the flagrant irregularities in the individual school-course which have now and then been noted, whereby one favorite nurse profits by an excess of bedside or out-patient instruction, and another draws in the lottery of favoritism a special course as clinic nurse; while a third bears the brunt of official disfavor and rounds out her career as hospital drudge—which means a comprehensive instruction in the arts of scrub-

bing, washing and the other ordinary kitchen duties, tasks she will probably never be called upon to perform after her graduation.

Each nurse entering a training-school should have the assurance that she is to profit in every respect according to the facilities offered by the given institution. Religious creed, nationality and the personal equation bear no relationship whatever to the course of instruction. An impartial administration is to be expected. This is the just right of the student body.

There is a qualifying factor, however, which may, and probably should, partially modify the course of instruction for the individual probationer. Not every medical student is cut out by nature to become a surgeon. No matter how prolonged or thorough his course of instruction may be in this subject, he still will not develop into a surgeon. So, it will not be possible to train every girl to become a good obstetrical nurse, or a good surgical nurse, or an excellent assistant for the operating-room. She is not equipped by nature for this class of work. These inherent qualifying points of the individual must be recognized by the superintendent of the nursing school.

Much valuable time may thus be saved by giving these girls the fundamentals only, and then enlarging upon the qualifications for which they are best adapted by nature. This does not mean unfair discrimination, but is one of the qualifications whereby a good superintendent of nursing is recognized. It means fair play and justice both to the girl herself and to the institution in which she is acquiring her education and training. It does not mean irregularity in the course of training for the individuals of the class, but a selective judgment in dealing with the girls in order to obtain the best ultimate results.

You will notice that I have this evening been referring to the ideal conditions for the training of a nurse? Carrying on the picture, what are the characteristics of the ideal nurse?

In the first place, she is physically fit; for her life is a strenuous one and the strain upon her nervous and physical forces exacting. A healthy body and mind, *mens sana in corpore sano,* must, therefore, be a fundamental requisite for a successful avocational career.

Then, too, she is eminently sympathetic and womanly, not coarse and unattractive. Her sympathetic nature, however, is tempered with judgment and firmness. She cultivates such gentle and feminine traits as will contribute to the comfort and peace of mind of the patient and the family. She cheerfully accommodates herself to circumstances as she finds them, and zealously refrains from measures and methods calculated to antagonize and estrange those with whom she must be intimately thrown.

She does not limit her knowledge and education strictly to professional branches. While excelling in these, she embellishes them by reading and study of other subjects whereby her conversation becomes attractive and interesting. For, be it remembered, most patients during the period of convalescence require not professional care alone, but diversion and mental relaxation as well, which can only be had by cheerful conversation and wise choice of literary refreshment. A broadly educated nurse can do much good in this way in hastening the physical and mental recuperation of her patient.

Again, like the ideal physician, the ideal nurse observes all the amenities that pertain to life. She is courteous and affable, careful to follow the requirements of polite society, and attentive to the professional aspect of these matters as well. She is refined and judicious in her speech. She does not refer to the horrors of operations or the unpleasant features of medical and surgical cases, which would tend to depress the mental condition of the invalid. From all such she sedulously abstains. The code of ethics as observed by ethical physicians plays a prominent rôle in her professional career also. It pertains as much to her as it does to the physician, means as much, is as much a part of her life as it is of his. She is guided by its dictates, and conducts all her professional acts in accordance with its high precepts.

Laying aside all personal likes and dislikes, she is loyal to the medical man who may happen to be in attendance upon the patient she is nursing. She may not like him personally; she may honestly think some other physician better suited to the case; but, for the time being, to her he is the only medical man in the world. She carefully carries out his orders and loyally assumes his place in his absence. Neither by word nor innuendo does she compare him with

other medical men in the presence of the patient or the family; nor does she mention and extol to them the virtues and medical or surgical skill of other men. If uncertain as to a proper course to pursue, she consults with the doctor in private and learns his wishes, and these she carries out to the best of her ability. His is the responsibility as to the outcome of the case; hers is the duty and pleasure of helping him to obtain a favorable result. Thus she wins his confidence and respect and, incidentally, the affection and confidence of the patient.

Finally, she is loyal to the patient and the family with which for the time being her lot is cast. It is as much her interest as the doctor's to obtain a successful termination to the case. Therefore, she does all in her power to promote the comfort and welfare of the sick one, by cheerfulness of demeanor, by quiet gentleness and patience during the trials of the illness, and by brightness of conversation during the convalescence. She never betrays a confidence that may be imparted to her by the patient or members of the family. She never speaks of the personal side of one case to subsequent patients she may attend.

In other words, the ideal nurse adheres closely to the spirit, as well as the formula, of the pledge which, hypothetically, she takes. Let me read you a pledge, which has been recommended by a large eastern hospital and which, I believe, might well be generally adopted:

"After deliberation and with full knowledge of the import, I do, in this assemblage, subscribe to the following Code for Nursing Service:

"When I offer my services to the sick I will do so without reservation as to either personal comfort or consideration, in face of duty.

"I intend to follow the ethical teachings and maintain the principles of professional and personal integrity, of which my uniform is indicative.

"It will be my especial concern to avoid thoughtless words which might cause me to bear false witness against my neighbor.

"I will strive to keep strong the foundations of my character and unceasingly show my faith in God."

Do you so subscribe?

Young ladies of the graduating class, what shall I say to you who are about to take your place in the battle of life? Tonight the world is yours; tomorrow it will be yours to conquer. Do not think the roses will bloom without intermission and the sun forever shine. There are character-lines to be drawn, obstacles to be overcome, battles to be fought, mountains to climb. There is much to be done in order to bring your vocation to maturity and perfection. You are to have a share in this work, so do your allotted task well. Build that portion of the structure which lies before you. Never mind how your neighbor in the profession is employed—that belongs to her. Let your goal be "Perfection"—for you. If you do not achieve that, at least you will be aiming toward it, and that means much. The Italians have a proverb which says: "No wind can do him good who steers for no port." You know your destination; let nothing swerve you from it. Be true to yourself and to your high purpose in life, and the future will be true to you. There is no reward commensurate with an approving conscience; so, if you with determination press toward the mark, though you fall by the way you cannot suffer defeat, for your face will be to the front. Then will your conscience and all the innumerable throng of witnesses shout the pæan of victory, "Well done, good and faithful servant."

ACUTE INTESTINAL OBSTRUCTION

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Intestinal obstruction with its high mortality has been one of the outstanding problems of surgery for generations. Within the last 10 or 15 years the work of Hartwell and Hoguet,[1] McCallum,[2] Dragstedt,[3] Haden and Orr,[4] McVicor,[5] Foster and Hausler,[6] Gatch, Trussler and Ayres,[7] McIver and Gamble[8] has done much to clear up our understanding of the accompanying toxemia and lower the mortality. A recapitulation of the known facts about this condition at the present time with their application and a word of warning about proper perspective and use of surgical judgment will be the purpose of this paper.

My attention was first called to the newer work on the toxemia of intestinal obstruction by the reports of L. R. Dragstedt[3] in 1916. He and his co-workers concluded that death was due

to absorption of a toxin resulting from the action of putrefactive bacteria on necrotic tissue. Their work is along the same line as that of numerous other investigators in the last two decades. In reading the literature one is confronted with a confusion of apparent facts and conclusions reached by different workers up until the last 2 or 3 years. As opinions become crystallized and confirmation occurs by different laboratories a co-ordination of the whole is finally taking place.

Certain facts are now fairly well established.

1. There are two types of obstruction: a. Simple occlusion. b. Strangulation.

2. Profound changes occur in the ionic constituents of the body fluids.

3. Obstruction is further subdivided in high obstruction involving the small bowel and low obstruction involving the large bowel.

4. A toxemia is present in strangulation the exact nature of which has not yet been determined.

1. Hartwell, Hoguet and Beekman[1] in 1912 first clearly stated after experimental study the two factors at work. Subsequent investigators submerged these two important points. To quote, "There are two factors at work producing the symptoms and causing death in this condition.

"First, the loss of water from the tissues due to excessive drain into the bowel in response to the irritation set up by the retained secretions. This water may be replaced by subcutaneous injection of normal saline solution, and the symptoms caused are thus entirely controlled."

Here we have the condition present in simple obstruction. Continuing, "Second, the entrance into the circulation of poisonous materials, which occurs only when the mucosa of the bowel is damaged. This damage results largely from trauma inflicted by the over-distention acting on the circulation, but possibly also by the chemical action of the digestive ferments stagnated above the obstruction. Such damage having resulted, there occurs a bacterial invasion into the bowel wall with death of tissue cells (which is invariably demonstrated by microscopic examination) and in this process the poisonous substances are elaborated. The action of these poisons is apparently not influenced by the administration of saline subcutaneously."

"The absorption of a poison from any source whatever is not a factor, so long as the mucosa remains intact."

These words might easily be taken as a quotation from an article appearing in 1929 for they express, before the period when blood chemistry was utilized, exactly what we feel today. This leads us to a discussion of the second type of obstruction, i. e., strangulation where there is in addition to occlusion stasis in the intestinal wall due to distension or actual anatomical interference with the blood supply. Dragstedt, Moorehead and Burcky[3] in 1917 further elaborated this point proving that production of the toxin depended on bacterial activity in the intestine but absorption depended on the presence of necrosis in the wall caused by circulatory stasis plus bacterial activity. Hoguet and Hartwell had anticipated our present concept then by differentiating simple obstruction without toxemia but with great dehydration due to loss of fluid and strangulation where toxemia invariably occurs. Dragstedt et al formulated a theory of toxemia due to wall necrosis and absorption of toxins resulting from bacterial activity which holds to the present. The important point is to clearly differentiate production of the toxin from its absorption. In simple obstruction we have loss of digestive secretions from excessive vomiting with dehydration and as we shall see later marked change in the organic constituents of the blood. These factors may be lethal in themselves. Undoubtedly bacterial content in the preoccluded bowel produces toxins the same as in strangulation but no absorption takes place. In strangulation the bowel wall is permeable to these toxins and we have a combination of dehydration, loss of electrolytes with in addition a toxemia which is invariably lethal if an adequate dose is absorbed.

Clinically, perhaps, fewer than 20 per cent. of obstruction cases remain simple. Gatch, Trussler and Ayres[7] have shown diagramatically how gaseous distention resulting from bacterial activity soon leads to discoloration of the wall superposing a circulatory disturbance with accompanying toxemia on a simple obstruction.

2. *Profound changes occur in the ionic constituents of the body fluids.* As one approaches this point we enter a phase concerning which much experimental work has been done. Much controversy and conflicting views have been stated which, however, bearing in mind an accu-

rate conception of the two types simple occlusion and strangulation, while at first impression conflicting, can be co-ordinated. To McCallum[2] goes the credit for first calling attention to the chloride changes in high obstruction. He showed that in cases of pyloric obstruction due to excessive vomiting with loss of H Cl secreted by the stomach there occurred a rapid loss of plasma chlorides with production of gastric tetany when these fell below a certain point. Tetany could be cured or prevented by injection of adequate amounts of sodium chloride solution. Similar symptoms may occur in other high obstruction. Haden and Orr in a large series of communications have developed and extended the leads given by Hoguet and Hartwell in the therapeutic use of normal saline and the observations of McCallum and described a fairly characteristic blood picture occurring in high obstruction. This consists of a fall in blood chlorides, rise in non-protein nitrogen and rise in CO_2 combining power or an alkalosis. They were able to prolong the lives of dogs with simple obstruction to 25 or 28 days by injections of NaCl solution and formulated the doctrine that NaCl exerted a protective or detoxifying action on the toxins, hence being removed from the circulation and falling in the blood. This would suppose the presence of a toxemia in simple obstruction which, as we have mentioned, in later work was proved only to be present in strangulation. In a recent communication they have abandoned this theory and agree with other workers, i. e., Foster and Hausler,[6] Wagenstein and Chunn,[9] Gatch, Trussler and Ayres,[7] McIver,[5] that the blood changes are due to simple loss of body fluids. The work of Foster and Hausler and recently an article published by McIver have done much to clarify the situation in regard to the blood picture.

Foster has shown the non-protein nitrogen bears no constant quantitative relationship to the Cl_2 but is due to lackened kidney secretion from dehydration. Also that the chlorides lost are proportional to that lost in the vomitus, urine and bowel evacuations or retained in increased secretions stagnant in the intestinal tract. McIver has further elucidated an important fact in the inter-relationship between the points at which secretions arise. According to McIver, the primary feature is a loss of the ionic content of the plasma, chiefly fixed base and chlorides, upsetting the ionic equilibrium due to lack of reabsorption. An approximately parallel loss of water occurs with resulting dehydration in the effort of nature to maintain the ionic balance as near normal as possible. A relative increase of bicarbonate ion occurs as a compensatory phenomenon with resulting alkalosis. The alkalosis is varying in degree, however, depending on the amount and source of digestive secretions lost as shown clearly by their diagrams. Excessive loss of pancreatic secretion with its low chloride and high bicarbonate content may even produce an acidosis as they have experimentally determined by means of pancreatic fistula. McIver, therefore, regards the dehydration as a result of interference with ionic balance but attributes death to dehydration with its accompanying lack of tissue respiration and defective transportation of nutrient and waste material.

3. *Simple high obstruction or obstruction in the small intestine is differentiated from low obstruction.* In the former reabsorption does not occur, hence all the blood changes mentioned take place. In simple low obstruction without circulatory change the patient may live for prolonged intervals because salt and water are reabsorbed in the large bowel and the blood changes do not take place.

4. *A combination of toxemia and shock is present in strangulation the exact nature of which has not yet been determined.* The confusion in results in much of the early work on intestinal obstructions was due to failure to clearly differentiate the underlying pathology. A patient seen after one week of vomiting, cramps in the abdomen and obstipation was in fairly good condition; pulse 80, temperature 99.6, respiration normal, mental state clear. Obstruction was found to be due to simple blockage of the ileum by a large gall stone. Another patient after 12 hours duration of symptoms was found pale, cold, clammy, pulse 140, B. P. subnormal. The cause was a mesenteric thrombosis. We have here two extremes of the condition. The first patient has no toxemia, simply lowered chlorides and dehydration. The second is suffering with intense toxemia and shock due to sudden interference with the circulation of the intestine over considerable length, rapid multiplication of bacteria and absorption of toxins through the wall of the area of disturbed circulation. In between

we may have a combination of these factors of strangulation and simple obstruction depending on the type of lesion and length of time elapsed.

Experimentally, those dogs prepared by the closed loop method dying within 3 or 4 days in spite of parenteral administration of salt solution were found to have a distended lumen with areas of discoloration due to beginning gangrene. The dogs that could be kept alive with a simple obstruction through the period of starvation after carrying them over the preliminary 4 or 5 days when the operative trama to the intestinal lumen subsided showed no necrosis of the bowel. The conclusion finally reached after much work and discussion is that bacterial activity in the obstructed lumen leads to production of a histamine like decomposition product which is highly toxic to the normal organism. This is the factor of production. Absorption, the second factor, depends on circulatory change in the wall which makes it permeable. On this may be and is superimposed loss of chlorides and water due to vomiting the excess intestinal secretions of simple obstruction. There occurs an upsetting of the ionic balance with rise in non-protein nitrogen due to lackened kidney secretion from dehydration or increase in urea from retention as a protective mechanism on the part of nature to maintain the acid base balance. So far no antidote for the toxemia is known. Administration of salt and water cannot stop the toxemia as Haden and Orr now admit. If a lethal dose once occurs death is inevitable.

Clinical Application. Aside from the pathological classification the obstructions may be considered in two groups. First, postoperative obstruction coming on in the first few days or week after operation. Secondly, miscellaneous types due to various causes such as volvulus, intussusception, hernias, gall stones, tumors. This includes, also, the frequent type due to adhesions and bands coming on from a few weeks to years after an abdominal operation. It seems to us such a division is important in early recognition and treatment.

Obstruction in the first few days following operation is one of the things the surgeon must constantly be on the alert for. The classical symptoms of vomiting, audible or visible peristalsis, cramps, obstipation are almost never all present. More often there is continued vomiting of small amounts of thin greenish or brownish fluid with a disagreeable odor but not extremely foul or fecal by any means. An acute dilatation is thought of but on passing the tube no huge quantity returns and vomiting continues in spite of repeated washings. In our experience, at least, pain or cramps are rare in these early postoperative cases. The bowel is already paralytic from operative manipulation and simply a gradually increasing distension occurs. On auscultation the belly is quiet in contrast to other types of obstruction. Stupes, pituitrin and repeated enemas have no results in relieving the distension as in the ordinary case of postoperative ileus. This picture cannot be too strongly emphasized. If unrelieved, distension and vomiting continue with mounting pulse, leaky skin and toxemia as circulatory change take place in the bowel wall from distension. Blood chemistry shows the decreased chlorides, increased non-protein nitrogen and alkalosis Haden and Orr mention.

The late obstruction coming on from a few weeks to years after an abdominal operation begins with acute almost agonizing intermittent abdominal cramps. Vomiting soon occurs, first the contents of the stomach, then biliary material. There is obstipation and distension varying in extent according to the height of the obstruction. On examining the abdomen with the stethoscope increased peristalsis is heard, tinkling or bell-like in character, once heard readily recognized. The temperature is usually not elevated and the pulse is strong and not much increased in rate. Study of the blood shows a leucocytosis quite high, usually 18,000 to 20,000, with an increase of polymorphonuclears out of proportion to the white count. This type of obstruction hits an individual in good health or normal strength with a bowel wall capable of vigorous peristalsis, so paroxysmal crampy pain is an outstanding feature in contrast to the early postoperative obstruction.

Treatment. In approaching this phase we deal with the most important part of the subject. So much has been said recently about blood chloride, non-protein nitrogen and carbon dioxide combining power that we are apt to lose sight of the most important thing of all—accurate clinical observation of all postoperative cases with prompt intervention in suspected cases. It is my earnest conviction, as White[10] has recently emphasized, that the mortality depends just as

much on early surgical relief as before the widespread knowledge of Haden and Orr's valuable contributions. Too much time should not be lost in a study of blood chemistry when the patient needs an operation. There is a natural aversion to reoperation 2 or 3 days after a serious procedure but when the condition becomes such that relief is demanded or obviously necessary, it is too late.

Once the diagnosis is made intervention is necessary. The type of procedure depends somewhat on the individual case. In general I am not enthusiastic over enterostomy alone. True, the procedure is simple, can be done under local anesthesia and closes up promptly, but the patient often dies. If our theory is correct and most obstructions are attended with interference in the circulation or if not in the beginning are later, removal of the cause, cutting bands, releasing multiple kinks if necessary followed by enterostomy, of course, as a relief for distension and instillation of ffuids, is the procedure of choice. Added to this frequent postoperative lavage by an indwelling Ledel tube as accumulation occurs is important in withdrawing the toxic products. As Gatch, Trussler & Ayres have pointed out, in the presence of gangrene no extensive resection and anastomosis should be attempted as these will nearly always let go leading to leakage and peritonitis but, if necessary to resect, a gun barrel enterostomy should be done and anastomosis later when the patient has recovered from the toxemia. C. Jeff Miller[11] in a recent analysis of 343 cases of intestinal obstruction agrees with Sir William Taylor[12] in dividing the cases into three classes. In the first group, seen early, the patient is in good condition and simple relief of the obstruction with usual preoperative and postoperative care is all that is necessary. In the second group, seen later, the condition is fair but toxemia has already become a factor and bowel drainage is instituted in *addition* to relief of the obstruction. And lastly, a third group seen late the condition is poor, toxemia is as important as the primary obstruction and only drainage of the bowel by enterostomy is warranted. The obstruction is taken care of later if the patient lives, as he usually does not.

We have left till last the important medical management of the case. Dehydration, hypochloremia, alkalosis and toxemia may still cause death of the patient. 1000 c.c. of 5% glucose in normal saline should be given subcutaneously when preparing for operation and administered as fast as absorbed to the amount of 5 or 6 liters daily. Blood chloride is determined by the laboratory and if lowered, 500 c.c. of freshly prepared 10% glucose in 3% NaCl solution given intravenously twice daily. 5% glucose in normal saline is given per rectum and may be injected hourly in the enterostomy tube. Haden and Orr recommend 2 grams of NaCl per kilogram of body weight as the dosage the first 24 hours and this may be gotten in quite readily by combining the above methods of absorption. The first effect, if an overwhelming dose of toxin has not occurred is increase in urinary output, slowing of the pulse, decrease in sweating and brightening of the aspect. Once a sufficient dose of unknown toxin has been absorbed treatment is of no avail and death is a matter of hours.

Summary. Obstruction is of two types, simple obstruction with occlusion of the intestinal lumen, and strangulation with interference in the blood supply. In the first type there is great loss of digestive secretions leading to disturbance of the ionic balance and accompanying loss of fluids and electrolyte. In strangulation a toxemia is superimposed thereon. The aim of our treatment is by a better understanding of these processes and use of proper clinical judgment to stop their progress before a lethal dose of toxin has been absorbed. Salt solution is not an antidote for the toxemia but restores proper ionic and fluid balance. Early operative intervention combined with enterostomy and large quantities of salt solution and glucose combined with continuous drainage of the gastric secretions, offers the best prognosis.

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THE TREATMENT OF SQUINT IN CHILDREN*

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IOWA CITY, IOWA

The treatment of non-paralytic convergent squint in children is a difficult problem since our knowledge of its actual cause is often quite meager. While there are many cases of convergent squint which are due to obvious causes, such as unilateral amblyopia produced by corneal, lens or fundus pathology, there are many more in which both eyes are apparently healthy and yet a squint exists. This latter type is the result of an innervation defect and is the condition with which the present discussion is concerned.

One of the most discouraging features in the treatment of squint is the evident lack of interest taken by the profession in educating the general public to realize that these children should be placed in the hands of a competent oculist as soon as the squint is first noticed. There is no doubt that our results are better in those cases which come to early treatment. It does not seem to be common knowledge that most children with untreated squint rapidly lose useful vision in one eye. After the squint is fully established the vision in the squinting eye soon becomes poor and it is difficult to build up the visual acuity again. In neglected cases there are two problems which eventually must be faced by those with a squint. The first problem is social and comes as a result of personal appearance; the second is economic and is the result of difficulty in obtaining employment since the risk of accident is greater in those having but one useful eye. We must impress upon the members of the medical profession and they in turn upon the general public the absolute necessity for the early treatment of these cases.

Before the rational treatment of strabismus may be undertaken the case must be thoroughly studied. A complete history of the onset and progress of the defect must be obtained from the parents. If a squint has been constantly present since birth it is probably of the paralytic type and treatment other than surgery is of no avail. One must not forget that infants under the age of six months normally present disjunctive movements of the eyes; i. e., one eye may wander in almost any direction and the opposite eye in another. In the usual functional type of squint the excessive convergence first appears between the ages of six months and three years. The deviation of the eyes from parallelism is present only occasionally in the early stages but gradually goes on until the eye deviate constantly. It is in the early intermittent stage that treatment is most satisfactory.

Following the history a thorough examination of the cornea, lens and fundus is necessary in order that pathologic processes in these structures may be ruled out. If the child is unable to see with one eye there is no stimulus to binocular single vision and it will be impossible to obtain parallelism of the two eyes except by operative interference.

The ability of the child to fix with the macula of the deviating eye is determined by covering the good eye and causing the poor eye to follow a small electric lamp or candle. If fixation is not accurate it is significant of poor vision. One must be sure that the child's attention does not lag during the determination of this function. If fixation in the squinting eye is eccentric or absent it is necessary to build up

*Read before Section on Eye, Ear, Nose and Throat, Illinois State Medical meeting, May 24, 1930.

the vision before any result may be expected from treatment.

Next the ocular rotations are determined. In infants an idea of the rotations may be had by holding the child's head and moving a light in different directions while the eyes follow the light. In abduction the cornea should reach the lateral canthus and in adduction about one-third of the cornea should lie medial to a line connecting the two lacrimal puncta.

An attempt must be made to determine the visual acuity. With very small children this may be done roughly by the use of pieces of money or other small objects thrown onto the floor. Each eye is to be tested separately. In older children the visual charts with pictures are available.

The type and degree of deviation are important. If the child fixes with either eye and the squint is a true alternating one only an operation will be successful. If one eye habitually squints and the other fixes and if the degree of convergence is greater for near than for distance the squint is more likely to be of the accommodative type and often responds to the usual course of non-surgical treatment.

Determination of the error of refraction is extremely important and must be estimated by skiascopy after thorough cycloplegia. Atropine (½—1%) is employed in all cases over a period of from four to six days. Even an infant may be skiascoped if one is persistent and is careful not to frighten the child. If possible the use of cylinders is advisable since in this way the astigmatic error is more accurately estimated.

In older children, i. e., those of three to five years of age, Worth advises the determination of the degree of fusion with the stereoscope or amblyoscope. This may not be done unless the vision is fairly good in the poor eye.

The first step in the treatment of functional convergent squint is the full correction of the existing hyperopia and astigmatism. Also any vertical deviation of the eyes is to be corrected with a prism ground into the correcting lenses. This type of squint often begins as a convergence excess which is associated with accommodative overaction. The excess accommodation is necessary in order that the child may form clear images on the retina. The third cranial nerve nucleus supposedly supplies both accommodation and convergence and overstimulation of one function is apparently associated with overstimulation of the other. In order that the excessive convergence stimulus may be reduced, the child's need for excess accommodation is removed by the constant wearing of a glass which fully corrects the error of refraction. In addition to this, one may remove still further the necessity for accommodation by the use of bifocals with a +1.50 to +3.00 add over each eye. Often the convergent squint is associated with a less pronounced vertical deviation and a correcting prism for the vertical error ground into the glasses enhances the value of the lenses as a means of reducing the squint. Any glasses which are prescribed must be worn during all waking hours. The refraction should be repeated every six to twelve months during the first few years. It may be stated here that glasses are well borne in young children, even by an infant of six months of age. The youngest child does not compain of glasses but, on the contrary, becomes fretful if they are left off. It is usually best to construct a head harness for holding in place the glasses of very young children.

It is now necessary to build up the vision in the squinting eye. Prolonged occlusion of the fixing eye is the best method of treatment. In addition to the glasses a pad is worn over the good eye for a period of one month, thus compelling the poor eye to do all the work, and the visual acuity is again determined if possible. Unless vision is normal the pad is re-applied and worn for another month. During all this time the child is compelled to use the poor eye and if it is possible to build up the vision it will be accomplished within a period of six or eight weeks. The vision in the original fixing eye may deteriorate somewhat but will be restored quickly after removing the patch. Neither the use of atropine nor the application of the bandage for a few hours each day is as efficient as constant prolonged occlusion.

Following corrections of the refractive error and restitution of vision in the squinting eye one is ready to begin fusion training. According to Worth the fusion sense is undeveloped in squinting children. I must confess that in my use of the stereoscope and amblyoscope it is in only a small percentage of cases that I have been able to satisfy myself that any great good comes from

such exercises; however, others seem to believe the results good and I shall keep on trying. In very young children such exercises are impossible; it is only in those of three to five years of age that one may hope to accomplish anything. The child's interest must be kept up by constantly changing the pictures. Recently Maddox has introduced a new stereoscopic instrument, the cheiroscope, with which the child employs the squinting eye and corresponding hand to draw or control objects which are seen with the habitually fixing eye. Fusion training must be continued over a prolonged period of time if one is to obtain fusion—even then only a small number of patients are able to fuse properly.

During the entire course of treatment the child should be kept in good general health and encouraged to stay out of doors as much as possible. Very little close work is permissible.

If the treatment of squint is begun in its early stages and persistently carried out over a period of time many children will have good vision in both eyes, many will have parallelism of the axes while wearing glasses and a few will develop fusion. However, there are many others in whom the result is poor and the eyes may be made parallel only by resorting to operative procedure. It must be remembered that operation produces only a cosmetic result and has no effect on restoration of vision.

There is a great difference of opinion among oculists as to the proper time to make an operation for convergent strabismus. My impression is that one should not resort to operative intervention too early—following early operation a convergent squint may be converted into a divergent one later on in life, even though the eyes were straight immediately following the surgical treatment. The normal growth of the globes and orbits tends to lessen a convergent strabismus. If one operates on young children I feel that only advancement should be performed and that one should be satisfied with an undercorrection until after the age of puberty. A second operation may then be made if necessary.

Neglected cases of squint must be corrected surgically and only a cosmetic result may be expected. Prior to operation the motility of each eye should be tested since there may be some secondary contracture of the ocular muscles. The ability to abduct and adduct each eye has a bearing on the choice of operation.

While many European surgeons prefer tenotomy and feel that they obtain good results with it, there is much to be said against free and uncontrolled severance of the ocular muscles. Personally I feel that uncontrolled tenotomy is rarely indicated. It is just these eyes which may later show a divergence. If it is necessary to correct an overacting muscle or one showing secondary contracture the recession operation advocated by Jameson is a safe and sane procedure.

In convergent squint of low degree (15 degrees or less) one should do a recession of the medial rectus if adduction is increased. If abduction is decreased the choice lies between advancement, resection or tucking of the lateral rectus. My preference is the resection according to Reese.

When the squint is moderate in amount (20 to 30 degrees) one may do a recession of the medial rectus and a resection of the lateral rectus.

In high errors (35 to 50 degrees) it is best to make a tenotomy of the medial rectus and follow with Worth's advancement of the lateral rectus. It is good policy to do a two-stage operation in moderate and high degrees of error; i. e., try to undercorrect slightly at the first operation and some time later make another operation on the opposite eye. In this way there is little danger of overcorrecting the squint.

SUMMARY

A thorough preliminary study of every case of convergent strabismus is necessary before treatment is instituted. This study should include a history of the onset and progress of the squint, examination of the media and fundus, determination of the ability of the squinting eye to fix, a study of the ocular rotations, determination of the visual acuity in each eye, measurement of the degree of deviation and an accurate determination of the refractive error.

Treatment should be instituted as soon as possible after the onset of squint. Glasses which fully correct both the refractive error and any vertical deviation should be prescribed and worn constantly. Often bifocals are of benefit since the addition of a stronger glass for near work lessens the accommodation-convergence stimulus.

If the vision in the squinting eye is subnormal the fixing eye is occluded over a period of one or two months in an attempt to improve vision. Fusion training is carried out over a period of two or three years in order to develop binocular single vision.

Cases which do not respond to the above outlined therapy and neglected cases are treated surgically. Only a cosmetic result is possible. The amount of squint and the power of adduction and abduction determine the type of operation. Uncontrolled tenotomy is not advisable. In low degrees of squint a Jameson recession or a Reese resection is advisable. In moderate squint the above two may be combined. When the deviation of the two eyes is over thirty degrees a Worth advancement combined with an anchored tenotomy gives the best result. In moderate and high errors a two-stage operation is safer since there is less tendency toward eventual divergence than there is following a single operation which at once corrects all the squint.

University Hospital.

THE SOURCES OF ENTRY OF PUERPERAL INFECTION: METHODS OF PREVENTION

DANIEL H. BESSESEN, M. D.

MINNEAPOLIS, MINN.

Bacteria causing infection in the maternal patient may already be in the patient or be introduced into the obstetric field from external sources. In accounting for infection, the latter is the source usually held responsible. The various parties who might have been causative of the tragedy are the patient, the doctor, the nurse or any other attendant at the delivery.

From within the patient may come sources as infected cut on the finger, ulcerated varicose veins, otitis media, diseases of the mouth, throat, nose, fissures of the nipple, abscess of the breast, appendicitis, cholecystitis, infection of the kidney, or more localized infection as valvitus, eczema, furunculosis, Bartholinitis, fissure in ano, hemorrhoids with ulceration, urethritis, cystitis, pyelitis, etc.

Introduction of bacteria caused by individuals other than the patient may come from coitus, manipulation, vaginal examinations, operative delivery, douches, especially in the home, baths, linen, clothing, or air. When such bacteria are carried from one patient to another, the infection has a much higher mortality.

When death comes from infection careful search is made for some likely origin and if the bacteria have been introduced outside the hospital, a sigh of relief escapes in lifting the responsibility of the infection from the shoulders of the accoucheur. But has the obstetrician escaped the responsibility? When we are dealing with an obstetric patient, are we not dealing with a patient upon whom we are expecting to perform a major operation, through an infected field, and in whom there is expected one or more large, open wounds? If this is the case, have we really discharged our responsibility when infection arises in a patient who has been delivered aseptically? An aseptic delivery means that we have examined the patient for bacteria and found them absent. If they are not absent, and infection arises, how is it that an antiseptic solution was not applied to the field? Only an antiseptic delivery will give definite assurance that no bacteria are present. What does it matter how the bacteria came there? Does that satisfactorily explain the reason for doing an aseptic delivery? Does that excuse the obstetric surgeon from applying antiseptic solutions?

We are all aware of the extensive studies made by some of our most famous and most accurate investigators concerning the presence of bacteria in the vagina. We all know that the upper regions of the vagina are supposed to be sterile, through the bactericidal action of the vaginal secretions. We know that in the majority of women, the upper regions of the vagina are sterile. But some of these women have pathogenic bacteria in the vagina, and in 10-15 per cent. of parturient women, they gain entrance into the body, to make the patient suffer the possibility of death from infection, or invalidism after the torturing experience of fighting for her life against a terrible febrile disease. These things we know, yet we are satisfied to allow the infliction of large obstetric wounds without the protection of antiseptic preparation. This is against all good judgment and fair thinking.

We have at present three antiseptic solutions which are reasonably marketed and are suitable for application to the mucous membrane. They are non-injurious to the mucosa, non-toxic, and yet actively bactericidal. These are mercurochrome, hexylresorcinol and merthiolate. If ap-

plied at intervals of eight hours during labor, they will kill or vitiate the bacteria present in the birth canal.

It does not concern us how the bacteria gain entrance into the generative tract, the mere fact that they are there is sufficient to warrant the application of some drug to kill them. Granted that vaginal examinations, introduction of the bag, any form of operation or manipulation in the parturition will increase the presence of infection, and we must avoid these factors so far as possible, yet even if no such complications were to arise in obstetric care, there would still be a large number of infections and deaths from infection. We are expected to apply the knowledge of bacteria and antisepsis to obstetrical procedures as to surgical operations. Every delivery, operative or non-operative should have an antiseptic preparation.

The preparation of the obstetric patient is one which must come more in consideration if we are to drop the puerperal morbidity. In washing the perineum, no fluid should be allowed to pass into the vagina, as this will carry infections from the vulva, labia, vestibule, into the so-called sterile regions. After cleansing in such a way that this does not happen, the perineum is painted from the introitus outward with 10 per cent. mercurochrome. Then 5 c.c. of a glycerine solution of 5 per cent. mercurochrome 1 per cent. tr. iodine is introduced into the vaginal tract through a speculum, or via a syringe and massaged into the mucous membrane, to make certain of its application to the entire surface outside the cervix. This preparation in the vagina is repeated every eight-twelve hours, during labor. Special painting is again repeated at the time of delivery. Such preparation will reduce the morbidity at least 50 per cent.

It must be remembered that this process does not excuse or permit any increase in operative procedures as these will raise the possibilities of infection again.

The fact that any patient has febrile puerperium indicates that bacteria have gained entrance into the body. If this has happened through the parturient canal, we have no finer proof of the need for antisepsis in that region. When we are working through an infected field, it is indicated to work antiseptically not aseptically. Therefore, since we do not know which patient is free from pathogenic bacteria, regardless of its source of entry, we must apply vaginal sterilization in obstetrics.

Marriages

JUSTIN LIMBAUGH CONRAD, Chicago, to Miss Frances Cecyl Sorensen of Moline, Ill., June 26.

EMANUEL NEWMAN to Miss Babette Froehlich, both of Chicago, June 10.

Personals

The Christian County Medical Society was addressed, July 17, by Dr. Thomas O. Freeman, Mattoon, on "Acute Surgical Conditions of the Abdomen."

Edwin O. Jordan, Ph. D., professor of bacteriology, University of Chicago, has been elected a member of the board of scientific directors of the International Health Division of the Rockefeller Foundation.

Drs. Clark E. Baker, Marion, spoke on "The Chemistry of Metabolism," and William G. Parker, Mount Vernon, "Some Aspects of Allergy," before the Franklin County Medical Society, June 25.

Rossleene M. Hetler, Ph. D., will leave the University of Illinois faculty to join the staff of Washington University School of Medicine, St. Louis, to carry on research in ophthalmology.

It is reported that Richard Scammon, Ph. D., professor of anatomy at the University of Minnesota Medical School, has been appointed to the same chair at the University of Chicago.

The McHenry County Medical Society was addressed at Woodstock, June 13, by Dr. Harry M. Hedge, Chicago, on "Some Common Diseases of the Skin."

Prof. Lorenz Böhler, Vienna, Austria, who was a guest of the American Medical Association at the recent Detroit session, held a clinic at the Cook County Hospital, July 18, demonstrating his work of reduction of fractures under local anesthesia together with his method of the use of plaster casts.

Clarence W. Muehlberger, Ph. D., assistant professor of toxicology and pharmacology, Northwestern University Medical School, was

appointed coroner's chemist by Coroner Bundesen, July 23, succeeding the late Dr. Ralph Waldo Webster.

Dr. Jerome R. Head has been appointed associate in surgery at Northwestern University Medical School. Dr. Head has been a member of the surgical staff of the University of Illinois and was formerly connected with the Wisconsin General Hospital.

Dr. Victor H. DeSomoskeoy, who has been in charge of the Morgan County Department of Public Health and the tuberculosis sanitorium, Jacksonville, is said to have tendered his resignation. Before coming to Jacksonville, Dr. De Somoskeoy was for seven years deputy health officer of Maryland.

Miss Jean McArthur, Secretary of the Educational Committee, has been appointed on the Board of the Illinois Women's Press Association and has been elected editor of *Pen Points,* the official publication and magazine of that organization.

Dr. Leon J. Goodman, Chicago, has resumed practice after spending six months in the clinics of Professor Frankl and Professor Temesvary in Budapest. His practice is limited to obstetrics and diseases of women.

News Notes

—The General Education Board has appropriated to the University of Chicago $1,000,000 toward $2,000,000 needed for the construction, equipment, endowment and upkeep of two buildings, one for the department of hygiene and bacteriology and one for the department of anatomy.

—Circuit Judge Charles E. Briggle, Springfield, declined, June 27, to intervene in the decision of the state department of registration and education and the department's medical committee which had refused to grant recognition to the Illinois College of Physicians and Surgeons, Chicago.

—A committee to aid in the survey of Illinois hospitals for the mentally diseased was named by Dr. James H. Hutton, president of the Chicago Medical Society. The personnel is as follows: Drs. Ralph C. Hamill, Robert S. Berghoff, John A. Wolfer, H. Douglas Singer, Peter Bassoe and George W. Hall. The committee will cooperate with Governor Emmerson in a plan for improvement of the state psychiatric institutions, it is reported.

—The Hancock County Medical Society held its July 7 meeting in honor of Dr. Julian E. Camp, Augusta, who recently finished his fiftieth year of continuous practice. Dr. Camp talked on "Medical Practice in 1880." Drs. Andy Hall, director, department of public health, spoke on "Relation Between the Health Department and the Practicing Physician"; William D. Chapman, Silvis, "Then and Now," and Everett P. Coleman, Canton, on "The Treatment of Eclampsia."

—The Max Pam Metabolic Unit for Clinical Research in diseases of metabolism was opened, July 21, at the Michael Reese Hospital. A capital fund of $150,000 is provided for the maintenance of this unit, which is completely equipped for the investigation of metabolic diseases along physiologic and chemical lines. It will be conducted in cooperation with departments of the Nelson Morris Institute of Research, which is a part of the Michael Reese group.

—The annual dinner of the faculty and alumni of Northwestern University Medical School was held June 13. In his annual report, Dean Irving S. Cutter pointed out, among other things, that applications to the freshman class to May 1 exceeded 1,500; under the direction of Dr. Arthur H. Curtis, the departments of gynecology and obstetrics have combined with clinical teaching facilities at Passavant, Wesley, St. Luke's, Michael Reese and Evanston hospitals; the bound volumes in the Archibald Church Library have increased from 33,000 to 46,000 since last year. Dr. Frank Billings was elected president of the Alumni Association for the ensuing year.

—In a recent house to house canvass, covering about 1 per cent. of the population in every county of the state, the data on disease was compared with official health report files. Only twenty-six out of 102 counties of the state met the minimum requirements for a satisfactory reporting of communicable diseases, or 75 per cent. of all cases of diphtheria, infantile paralysis, scarlet fever, smallpox, typhoid fever and tuberculosis. The canvass disclosed that one-third of all cases of smallpox goes unreported. Less than

two out of three cases of diphtheria, typhoid and scarlet fever are reported to health authorities and more than two out of three cases of infantile paralysis escape notification. About half of the tuberculosis cases are registered.

—Dr. Joseph C. Bloodgood announces a meeting in the ballroom of the Belvidere Hotel, Baltimore, September 15-17, for the lantern slide demonstration of Diagnosis and Treatment of Diseases and Tumors of Bone. Slides or films of rare lesions may be presented for study to Miss Maude Walker, secretary to Dr. Bloodgood. As the capacity of the ballroom is limited to 800, it will be necessary to register with the hotel in advance.

—St. Mary's Hospital, Kankakee, announced the opening of a new wing, with a "Clinic Day," on May 6. The addition increases the capacity of the hospital to 150 beds. About 100 physicians were in attendance. The following program was given, Dr. A. L. Nickerson presiding:

FORENOON

SECTION ON MEDICINE

5th Floor—Parlor A

9:00—Pemphigus .....Dr. A. N. House

9:30—Sarcoma of Vertebra with Involvement of the Cord..Dr. W. J. Hagstrom

10:00—Coronary Sclerosis .....N. T. Stevens

10:40—Pernicious Anemia .....G. H. Ayling

11:20—Diabetes .....G. E. Irwin

SECTION ON SURGERY

5th Floor

9:00—Goitre—Op. Room 1.Dr. R. L. Benjamin
Glaucoma—Op. Room 2.....
...Drs. J. H. Roth and C. W. Geiger
Pelvic Tumor—Op. Room 3.....
.....Dr. J. A. Brown

10:00—Goitre—Op. Room 1.....
.....Dr. E. S. Hamilton
Bunion—Op. Room 3.....
.....Drs. Wilson, Bundy and Rayer

11:00—Goitre—Op. Room 1....Dr. E. P. Sloan
Inguinal Hernia—Op. Room 2.....
...Drs. Cohn, Langlois and Goodwin

12:15—Luncheon—4th floor.
Inspection of Hospital

AFTERNOON

Basement

Dr. J. A. Guertin, President County Medical Society, Presiding

2:00—Treatment of Varicose Veins.....
.....Dr. Geo. de Takats, Chicago

2:40—Indications and Technique of Caesarean Section..Dr. F. H. Falls, Chicago

3:20—Local Anesthesia in Fractures and Dislocations .....
.....Dr. C. R. G. Forrester, Chicago

4:00—Dry Clinic on Goitre.....
.....Dr. E. P. Sloan, Bloomington

EVENING

Gold Room, Hotel Kankakee

6:30—Complimentary Banquet (informal).
Dr. A. M. Corwin, Chicago, Principal Speaker
"A Doctor's Philosophy"

Deaths

WILLIAM SAMUEL BELLOWS, Waukegan, Ill.; Rush Medical College, Chicago, 1901; on the staffs of St. Therese's Hospital and the Victory Memorial Hospital; aged 55; died, June 24, of heart disease.

ALBERT LESLIE BRITTIN, Athens, Ill.; Rush Medical College, 1884; active in Civic and Medical organization affairs; president of Illinois State Medical Society, 1914-15; aged 68; died, July 10, following an operation for appendicitis at St. John's hospital, Springfield.

ADDIE E. F. GRAY, Chicago; Hering Medical College, Chicago, 1899; aged 73; died, June 30, of acute myocarditis and nephritis.

THOMAS C. HILL, Springfield, Ill.; Rush Medical College, Chicago, 1888; aged 66; died, June 7, in St. John's Hospital, of carcinoma of the bladder.

JAMES A. SHRADER, East Moline, Ill. (licensed, Iowa, 1886); veteran of the Civil War; aged 87; died, May 23, of diabetes mellitus.

CARL A. WEIL, Chicago; College of Physicians and Surgeons, Chicago, 1887; aged 69; died, May 17, of acute dilatation of the heart and chronic myocarditis.

HENRY ALFRED YOUNG, Chicago; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1901; aged 56; died, July 5, in the Alexian Brothers Hospital, of cardiorenal disease.

VESPER SHAFF, Chicago; Northwestern University Woman's Medical School, Chicago, 1896; aged 66; on the staff of the Woman's and Children's Hospital, where she died, July 21, of diabetes mellitus.

JOHN L. WALKER, Peoria, Ill.; Hahnemann Medical College and Hospital, Chicago, 1881; aged 86; died, July 2, in the Proctor Hospital, of pneumonia, following an injury received when struck by an automobile while riding a bicycle.

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